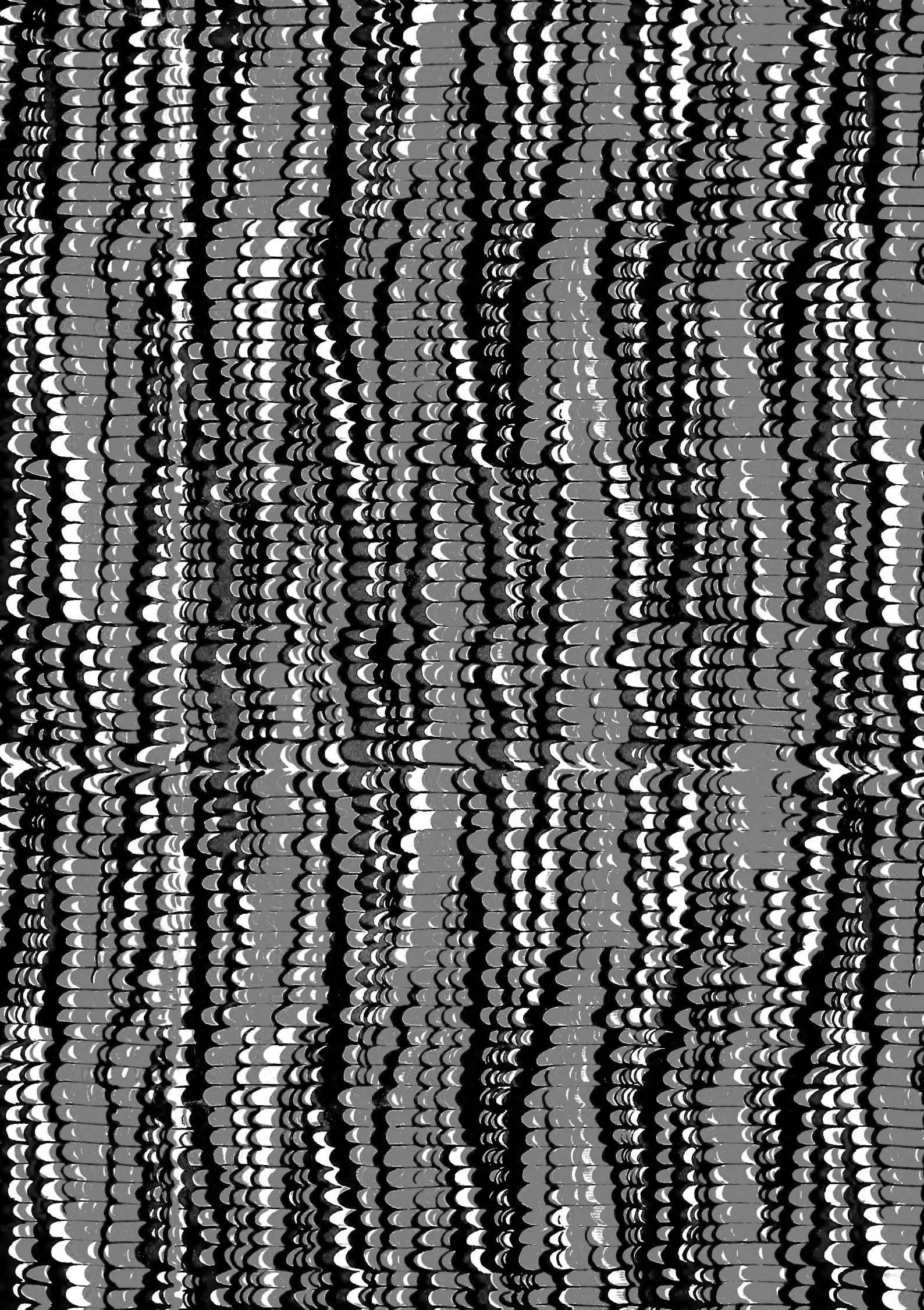
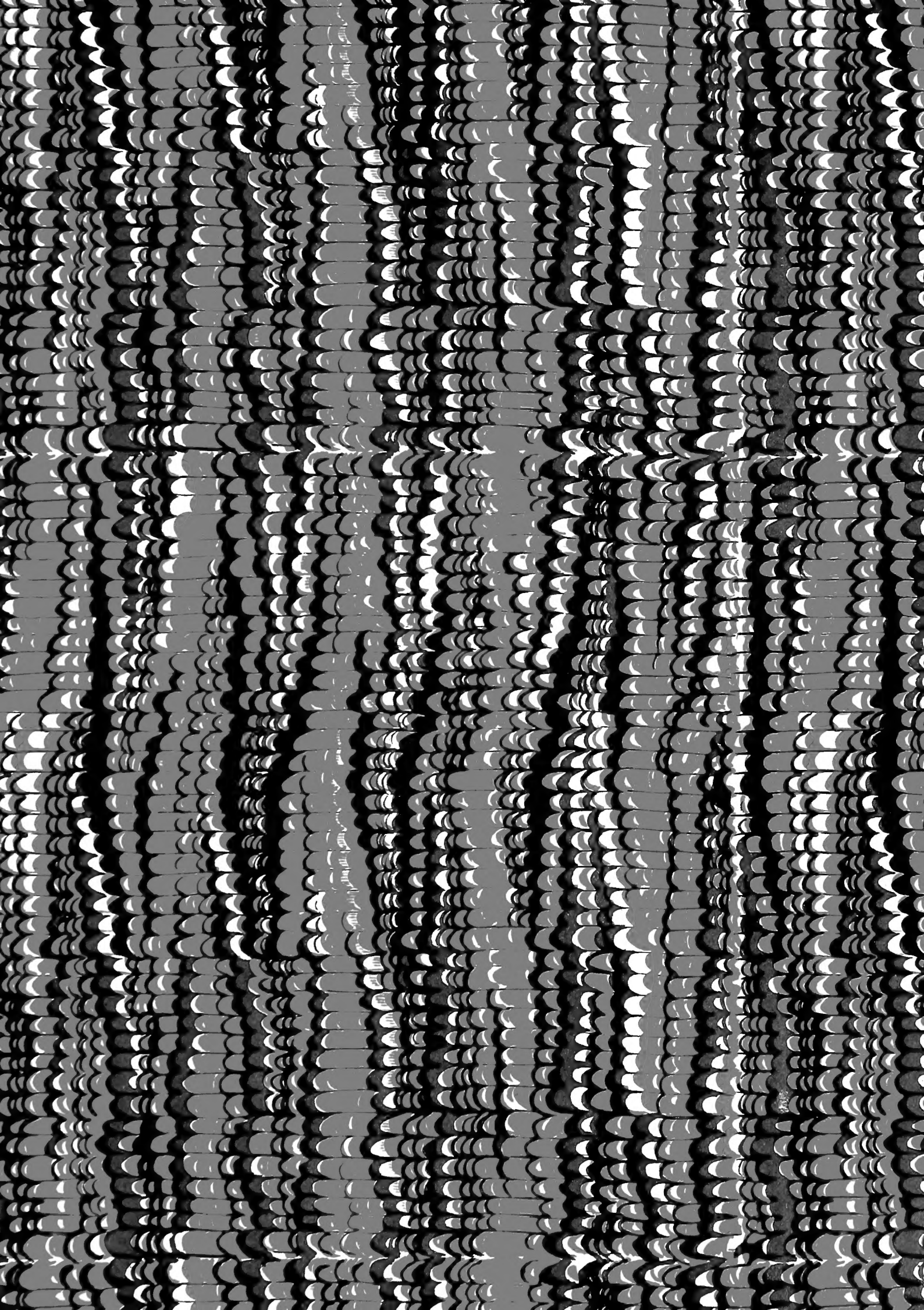
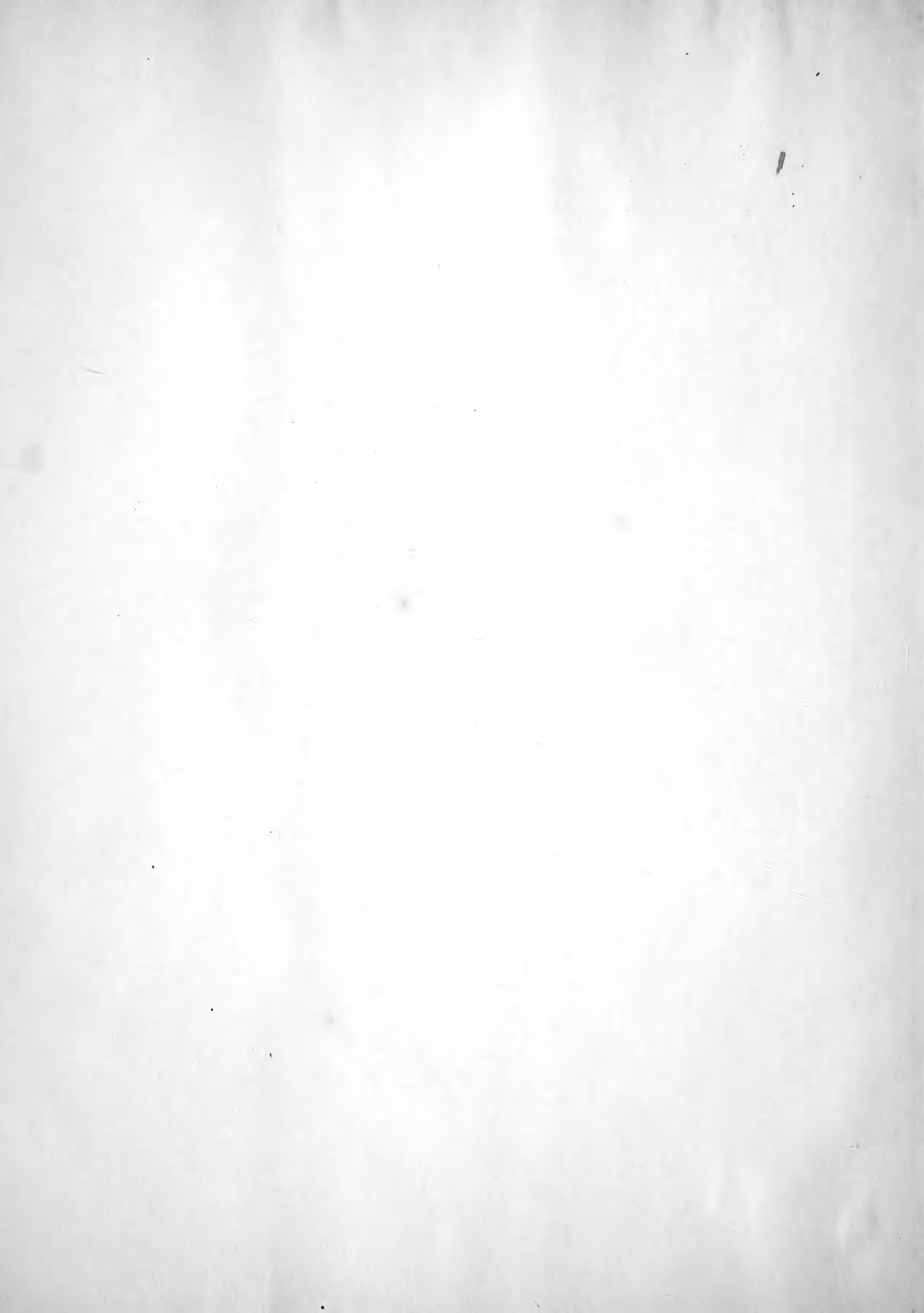


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DIPTERA

GENERA INSECTORUM

PUBLIÉS PAR

P. WYTSMAN

DIPTERA

FAM. CULICIDÆ

by Fred. V. THEOBALD

1905

PRIX : FR. 15.50

On souscrit chez M. P. WYTSMAN, 108, Boulevard du Nord, Bruxelles.

Prospectus gratis et franco sur demande.

DIPTERA

FAM. CULICIDÆ

DIPTERA

FAM. CULICIDÆ

by Fred. V. THEOBALD

WITH 2 COLOURED PLATES



THE family *Culicidæ* until recently was limited to a few genera and but comparatively few species were known, but owing to the important part they play in the spread of certain diseases (malaria, yellow fever, filariasis, etc.) great numbers have been collected during the last few years in all parts of the world.

These great collections have necessitated the formation of many new genera and the employment of more definite characters for the old genera.

Culicidæ are known under a great variety of popular names, such as : *Gnats*, *Mosquitoes*, *Gallinippers*, in Anglo-Saxon tongue; *Moustiques*, *Cousin*, *Maringouin*, in France; *Zanzare* and *Zanzaroni*, in Italy; in Germany, *Stechmücken*; *Zancudos* and *Mosquitos*, in South America; *Mutchers*, in India, etc.

Linnaeus (1735) merely refers to the genus *Culex* (Syst. Nat.) and upon this genus with its type *Culex pipiens* the family characters are founded.

Meigen, in 1804 (*Classs. und Beschr. der Europ. zweiflügelichen Insekten*), separated the Mosquitoes off as *Tipulariæ culiciformes*.

Later Latreille (1825) grouped them under the name *Culicides*, which term was also employed by Macquart and Zetterstedt. So far only three genera were known, namely *Anopheles*, *Culex* and *Aedes*.

In 1827, Robineau-Desvoidy, in his *Essai sur la tribu des Culicides*, added three more genera : *Megarhinus*, *Sabethes* and *Psorophora*.

Stephens, in 1829 (Syst. Cat. Brit. Ins.), placed these insects in the family *Culicidæ* and since that date all Mosquitoes have been included under that name.

The chief writings dealing with *Culicidæ*, irrespective of the general works on Diptera are

Robineau Desvoidy's *Essai sur la tribu des Culicidæ*, in 1827; Arribalzaga's description of Argentine Culicidæ in the *Dipterologia Argentina* (Rev. del Museo de La Plata), in 1891; Ficalbi's *Revisione sistematica della famiglia delle Culicidæ Europea*, in 1896, and *Venti Specie die Zanzare (Culicidæ) Italiane*, in 1899.

Arribalzaga added four new genera, namely *Tæniorhynchus*, *Janthinosoma*, *Ochlerotatus* and *Heteronychia*. The two latter cannot be retained for reasons mentioned later.

In 1900, Giles published a *Handbook of Gnats or Mosquitoes* (Culicidæ) which is mainly a compilation of the majority of previously described species. The work being of interest however as showing the chaotic state of the family at that time.

In 1901, the Trustees of the British Museum published my *Monograph of the Culicidæ of the World* and later, in 1903, a third volume of the same work.

The enormous amount of material collected since 1900 in various parts of the world necessitated the formation of many new genera described in the last mentioned work. Since 1903 they have been further augmented. Some new genera are detailed here thus completing our present knowledge with the exception of those occurring in the collection of the National Museum of Hungary which will shortly appear in my catalogue of the collection. (Ann. Ungar. Nat. Mus. Vol. 3, 1905.)

The generic characters were previously based on the palpi, the primary genera being distinguished as follow : *Anopheles*, palpi long in both sexes; *Culex*, palpi long in the ♂, short in the ♀; *Aedes*, palpi short in both sexes.

Robineau Desvoidy's genera which are all very marked are referred to later and also Arribalzagas.

The characters used in my recent classification are mainly based on the scales of the head, thorax, abdomen and wings.

In 1903, Neveu-Lemaire proposed a modification of this classification using also the palpal jointing for generic purposes, but for obvious reasons the squamose characters which can be seen in museum specimens with the aid of the microscope have been generally adopted. Jointing of the palpi can only be seen in micro-preparations after the scales have been deuded.

Characters of the Family. — Mouth parts prolonged into a piercing proboscis, composed of mandibles, maxillae, upper and lower lips and a tubular hypopharynx.

Head clothed with variously formed scales. Thorax with hairs or scales, the metanotum usually nude but in some genera (*Joblotia*, *Sabethes*, etc.), with scales and chaetae or chaetae alone (*Wyeomyia*, *Phoniomyia*, etc.).

Abdomen with either hairs, scales or both. Legs and veins of the wings in all cases clothed with scales of varied forms. Wings with six longitudinal veins (in one case seven : *Heptaphlebomyia*), costal vein carried completely around the border of the wing; two prominent fork-cells (1st submarginal and 2nd posterior cells). Legs with equal unguis in the ♀; in the ♂ the fore and mid unguis unequal, hind equal.

Antennæ in ♀ usually plumose, but not always (*Deinocerites*, *Sabethes*, etc.), in the ♀ pilose. Palpi variable, in form composed of from one to six segments. The proboscis usually straight (*Culex*, *Anopheles*) but may be curved (*Megarhinus*, etc.), jointed and elbowed (*Limatus*) or swollen (*Mimomyia*). Larvæ and pupæ aquatic, living in both salt and fresh water.

Generic Characters. — The following are characters used as generic distinctions, in my *Monograph of the Culicidæ of the World* and in subsequent writings.

Scales. — These structures vary and are the most important characters to be noticed in grouping this family. They range in form from fine curved hair-like structures to broad flat plates. The following types of scales may be noticed :

- | | |
|------------------------------|-----------------------------|
| 1. Flat or spatulate scales; | 3. Broad Aedeomyia scales; |
| 2. Broad Mansonia scales; | 4. Curved hair-like scales; |

- | | |
|--------------------------------------|--------------------------------|
| 5. Narrow-curved scales; | 12. Lanceolate scales; |
| 6. Spindle shaped scales; | 13. Linear scales; |
| 7. Small spindle shaped scales; | 14. Tæniorhynchus-like scales; |
| 8. Inflated or parti-colored scales; | 15. Melanoconion scales; |
| 9. Pyriform scales; | 16. Cycloleppterons scales; |
| 10. Upright forked scales; | 17. Heart shaped scales. |
| 11. Twisted upright scales; | |

The head is ornamented in a variety of ways with the following scales — upright forked, flat spatulate, narrow-curved and spindle shaped, according to the genus. The eyes are large and reniform, the number of facets varying in the different species. (This is a useless character however as the eyes shrink and become so distorted that the facets cannot be counted.)

The palpi vary very much in form and also in the number of joints not only in different species, but in the two sexes. They may be composed of one segment only (some *Aedines*) or of six segments (some *Culicines*); there are basal constrictions which sometimes may become joints. All stages in length occur from those as long or longer than the proboscis to those single jointed ones scarcely perceptible. It is thus impossible to use them as generic characters particularly as they vary even in the same species according to Neveu-Lemaire.

The antennæ are pilose in the ♀ in all cases; in the male they are usually plumose, but in some genera (*Sabethes*, *Deinocerites*, *Wyeomyia*, etc.) they are verticillate; the hairs being rather longer than in the ♂'s. As a rule they are shorter than the proboscis but in one genus (*Deinocerites*) they are much longer. The basal segments may or may not be scaled. In one genus (*Lophoceraomyia*) (1) the antennæ in the ♂ have a curious sensory organ attached to them forming a distinct brush like process. The relative lengths of the basal joints is also of specific importance in the *Megarhinina*.

The proboscis in the ♀ is composed of an upper and lower lip, the latter ending in the so called *labellæ*, jointed processes of somewhat variable form, probably the labial palps; these two parts form a sheath in which lie in the ♀ four stylets, two being the mandibles and two the maxillæ, and in addition a tubular organ the hypopharynx. In the ♂ the mandibles and maxillæ are much reduced but traces may be found in certain species. The ♂'s however do not bite. In form the proboscis is usually straight and simple as long or longer than the body; it may be curved (*Megarhinina*), straight (*Culicina*) or elbowed and jointed (*Limatus*). In *Uranotenia* it is usually swollen apically and in the allied *Mimomyias* much swollen along its apical half in the male sex.

The thorax is divided into three well defined areas, the greater part being the mesonotum, in front lie two more or less prominent lateral lobes — the prothoracic lobes — behind this the metanotum and between it and the mesonotum is situated the scutellum. The scutellum is trilobed in most Culicidæ (*Culicines* and *Aedines*) but in the *Anophelines* and *Corethrines* it is simple. All parts are scaly, except in the *Anopheles* and *Corethrines* which may have hairs only on the thorax (*Anopheles* and *Myzomyia*). As a rule the prothorax in *Culex* is bristly and not scaly, whilst in the *Stegomyias*, etc. distinct scales occur. In all *Anophelina*, *Megarhinina* and most *Culicina* the metanotum is nude, but in *Joblotia* it has scales and chaetae, as it also has in many *Aedines* (*Sabethes*, *Limatus*, etc.) The scutellum has chaetae bordering its edge (posterior border-bristles) these may vary in number in the same species (*Culex fatigans*) or they may be constant (certain *Aedines*), they cannot however be relied upon as specific characters.

The abdomen may be nude (*Anopheles*) or partly scaled (*Cellia*, *Nyssorrhynchus*) or completely scaled (*Aldrichia*, *Culex*, etc.), the scales may form a complete armour (*Aldrichia*, *Culex*, etc.) or may be loose and ragged (*Mucidus*), occasionally there are lateral tufts of scales (*Cellia*), ventral tufts (*Myzorhynchus*) or caudal fans (*Megarhinus*). The ♂ abdomen is thinner than the ♀ and is usually (*Culicines* and

(1) The description of this genus will be found in the Annales of the Nat. Mus. Hungary, Vol. 3. 1905.

Anophelines) very hairy. The ♂ genitalia consist of claspers attached to basal segments which vary in each species.

The *wings* have the veins clothed with scales and the posterior border fringed with the same. The scales vary in different genera. In most genera there are median vein-scales and lateral vein-scales; the scales may be uniformly colored (*Culex pipiens*, etc.) or may be mottled (*Grabhamia*, etc.); in some (*Theobaldia*) they are more dense in certain areas giving the wing a spotted appearance. Most *Anophelines* have spotted wings due to different colored scales and also a few *Culicines* (*Lutzia* and *Culex mimeticus*). There are six longitudinal veins in all save the genus *Heptaphlebomyia* in which a distinct seventh vein occurs ornamented with scales. The fork-cells (first submarginal and second posterior) are usually long (*Culex*, *Anopheles*, etc.) but the first submarginal may be very small (*Megarhinus*, *Uranotenia*, etc.). The relative lengths of the cells cannot be taken as of any specific importance as they vary in each species and even in the specimens from one batch of eggs. The cross-veins most prominent are the supernumerary mid and posterior, they also vary to a considerable extent in the same species, specially in certain species (*Theobaldia incidens*, *Culex fatigans*, etc.).

Seasonal variation. — The spotting of the wings in the *Anophelines* has been taken to be of specific importance. The spots are however variable at all times of the year in certain species. The greatest variation occurs however at certain definite seasons, so that we get well marked seasonal variations and dark and light varieties. It is probable that some recently instituted species will thus have to be sunk as seasonal varieties.

The *legs* are usually simple, but in some genera may be provided with outstanding scales giving them a ragged appearance (*Psorophora*, *Mucidus*) a brush-like appearance (*Zanthinosoma*), or they may be provided with paddle-like groups of hairs (*Sabethes*, *Eretmapodites*). The unguis in the ♀'s are equal in size, they may be simple or uni-serrated, in the ♂'s those of the fore and mid-legs are unequal and may or may not be simple or serrated, when the latter, uni-serrated or bi-serrated and a few cases tri-serrated (*Anophelines*).

Larval and pupal characters. — The species which present such close affinities that they cannot be separated with any degree of certainty may often be clearly defined by an examination of the larvæ or pupæ.

In the *Anophelines* the frontal hairs of the larvæ form the most useful character for differentiation; in the *Culicines* the grouping of the spines on the spine area at the base of the siphon. In regards to the pupæ the form of the siphons is the most important character, but does not vary much in species although generically it is of great use (1).

The *eggs* of *Culicidæ* also present great variation. Some are laid singly (*Stegomyia*), others singly but afterwards floating together in some definite form (*Anophelines*); in *Culex*, etc. they are laid in masses or rafts. They also vary in form some being spindle shaped (*Stegomyia*, *Grabhamia*), others bottle shaped (*Taeniorhynchus*), some with long thin necks (*Mansonia*).

Notes on the classification. — The characters of the three primary genera (*Anopheles*, *Culex* and *Aedes*) are now taken as subfamily characters. To these subfamilies *Anophelinæ*, *Culicinæ* and *Aedeomyinæ* are also added the following *Megarhininæ*, *Toxorhynchitinae*, *Joblotinae*, *Heptaphlebomyinæ* and *Corethrinae*.

There is some doubt as to whether the last named should be included in the family *Culidinae* for they have not that characteristic piercing proboscis, nor such definite scales; on the other hand the venation of the wings is similar to *Culex* and their life-history also agrees with that of the true *Culicidæ*.

(1) Recently Dr. Grabham informs me that the frontal hairs of the larvæ vary in form in different stages of the same species..

It is considered best therefore to retain the few genera of the *Corethrina* in this family. The females of *Culicinae* and *Aedeomyinae* are so alike that without the examination of the males it is not always possible to place them in the right subfamily, the number of palpal joints varying in both and also the scale structure and venation. Hence a few genera recorded here are put down with doubt under the larger grouping.

KEY OF THE SUBFAMILIES

A. Proboscis, formed for piercing, wings with six longitudinal veins.

I. Palpi long in ♂.

a) Metanotum nude.

α. Palpi long in ♂ and ♀, in the ♀ not quite as long as the proboscis.

1. First submarginal cell, as long or longer than the second posterior cell Subfam. ANOPHELINÆ.

2. First submarginal cell much smaller than the second posterior cell. Proboscis curved Subfam. MEGARHININÆ.

β. Palpi long in the ♂, short in the ♀.

3. First submarginal cell much smaller than the second posterior cell. Proboscis curved Subfam. TOXORHYNCHITINÆ.

4. First submarginal cell as long or longer than the second posterior cell. Proboscis straight Subfam. CULICINÆ.

b) Metanotum scaly and with chaetae.

5. Palpi long and acuminate in ♂, short in ♀ Subfam. JOBLOTINÆ.

II. Palpi short in ♂.

Palpi short in both sexes, often very minute Subfam. AEDEOMYINÆ.

B. Proboscis formed for piercing; wings with seven scaled longitudinal veins.

Palpi long in ♂, short in ♀ Subfam. HEPTAPHLEBOMYINÆ.

C. Proboscis not formed for piercing; wings with six longitudinal veins; hairy not

scaly Subfam. CORETHRINÆ.

I. SUBFAM. ANOPHELINÆ, THEOBALD

This subfamily can be told from all others by the long female palpi and long first submarginal cell. The palpal character occurs in the next subfamily, but the members of the *Megarhininae* have very small first submarginal cells.

Characters. — Head with upright forked scales, now and then with those of other forms; thorax scaly or hairy; metanotum nude; scutellum simple. Proboscis straight and thin. Palpi long and clavate in the ♂, long in the ♀ but usually not quite so long as the proboscis, more or less acuminate; more or less scaly. Antennæ verticillate in ♀; plumose in ♂; basal joints may or may not be scaly. Wings with longish fork-cells; the first submarginal usually longer than the second posterior; both small in the ♂. Ungues in ♂, unequal on fore and mid-legs, one or both may be simple, uni-, bi- or triserrated. Larvæ without respiratory siphon.

TABLE OF GENERA

- a) *Thorax and abdomen with hair-like curved scales.*
- α. No flat scales on head, but upright forked ones.*
1. *Wing scales large, lanceolate* Genus ANOPHELES, Meigen.
2. *Wing scales mostly small, long and narrow or slightly lanceolate* Genus MYZOMYIA, Blanchard.
3. *Wings with patches of large inflated scales* Genus CYCLOLEPPTERON, Theobald.
- β. Median area of head with some flat scales; prothoracic lobes mammillated.*
4. *Wing scales lanceolate* Genus STETHOMYIA, Theobald.
- b) *Thorax with narrow curved scales; abdomen hairy.*
5. *Wing scales small and lanceolate* Genus PYRETOPHORUS, Blanchard.
- c) *Thorax with hair-like curved scales and some narrow curved ones in front; abdomen with apical lateral scale tufts and scaly venter; no ventral tuft.*
6. *Wing scales lanceolate* Genus ARRIBALZAGIA, Theobald.
- d) *Thorax with hair-like curved scales; no lateral abdominal tufts; distinct apical ventral tuft. Palpi densely scaly.*
7. *Wing with dense large lanceolate scales* Genus MYZORHYNCHUS, Blanchard.
- e) *Thorax with hair-like curved scales and some narrow curved lateral ones; abdomen hairy with dense long hair-like lateral apical scaly tufts.*
8. *Wing scales short, dense, lanceolate; fork-cells short.* Genus CHRISTYA, Theobald.
- f) *Thorax with very long hair-like curved scales; abdomen with hairs except last two segments which are scaly. Dense scale tufts to hind femora.*
9. *Wings with broadish, blunt lanceolate scales.* Genus LOPHOSCELOMYIA, Theobald.
- g) *Thorax and abdomen with scales.*
10. *Thoracic scales narrow-curved or spindle shaped; abdominal scales as lateral tufts and small dorsal patches of flat scales* Genus NYSSORHYNCHUS, Blanchard.
11. *Abdomen nearly completely scaled with long irregular scales and with lateral scale tufts* Genus CELLIA, Theobald.
12. *Abdomen completely scaled with large flat scales as in Culex.* Genus ALDRICHIA, Theobald.

I. GENUS ANOPHELES, MEIGEN

Anopheles, Meigen, Syst. Besch. Eur. Zweifl. Ins. Dipt. Vol. 1, p. 10, pl. 17, f. 5 & 6 (1818).

Characters. — Thorax and abdomen clothed with hair-like curved scales, practically hairs. Palpi in the ♀ thin, not densely scaled, nearly as long as the proboscis; in the ♂ clavate. Head with numerous upright forked scales. Antennæ plumose in ♂; verticillate in the ♀. Wings with large lanceolate scales, which may or may not be united into denser groups forming spots. Mostly large species.

Geographical distribution of species. — This genus occurs in Europe, Africa, Asia, North America, West Indies and probably Australia. It is essentially a temperate region genus, those that occur in other regions being mostly hill species.

1. *A. maculipennis*, Meigen, Syst. Besch. Eur. Zweifl. Ins. Dipt. Vol. 1, p. 11, f. 2 (1818) (Europe and North America). — **Plate I, Fig. 1.**
claviger, Fabricius, No type existed. Syst. Antl. p. 35 (1805).
quadrimaculatus, Say, Long's. Exped. St-Peters. River. Vol. 2, app. 356.
2. *A. bifurcatus*, Linnaeus, Ins. Suec. p. 1891 (1758) (Europe, North America).
trifurcatus, Fabricius, Ent. Syst. Vol. 4, p. 401 (3) (1792).
claviger, Meigen, Syst. Besch. Vol. 1-2-1 and 6, p. 242 (1804).
villosus, Robineau-Desvoidy, Essai Culic. (1827).
walkeri, Theobald, Mon. Culic. Vol. 1, p. 199 (1901).
3. *A. algeriensis*, Theobald, Ann. Inst. Pasteur, Vol. 17, p. 2 (1903); Mon. Culic. Vol. 3, p. 21 (1903) (Algeria).
4. *A. aitkenii*, James & Theobald, Mon. Culic. Vol. 3, p. 22 (1903) (Goa and Karwar).
5. *A. immaculatus*, Theobald, Mon. Culic. Vol. 3, p. 22 (1903) (India).
6. *A. nigripes*, Staeger, Syst. For. o. d. i. Denm. Nid. fundne Dipt. (1839) (Northern Europe and North America).
- ? *plumbeus*, Haliday, Zool. Journ. Vol. 12 (1828).
7. *A. lindesayii*, Giles, Hand-Book of Gnats, p. 166 (1900) (North India).
8. *A. punctipennis*, Say, Journ. Acad. Nat. Sc. Philad. Vol. 3 (1823) (North America).
Culex hyemalis, Fitch.
9. *A. pseudopunctipennis*, Theobald, Mon. Culic. Vol. 2, p. 305 (1901) (Grenada and New Mexico).
10. *A. gigas*, Giles, Ent. Monthly Mag. Vol. 37, p. 196 (Conoor, Nehilgerri Hills, India).
11. *A. crucians*, Wiedemann, Aussereurop. Zweifl. Ins. p. 12 (1828) (North America).
12. *A. wellcomei*, Theobald, Rep. Gordon College Lab. Sudan, p. 64 (1904) (Sudan, Aden Hinterland).
13. *A. barberi*, Coquillett, Canad. Ent. p. 310 (1903) (Maryland, U. S. A.).
 Probably a variety of *bifurcatus*.
14. *A. franciscanus*, McCracken, Ent. News. Vol. 15, p. 12 (1904) (California).

SPECIES UNCERTAIN

A. ferrugineus, Wiedemann, Aussereurop. Zweifl. Ins. p. 12 (1828) (New Orleans).

2. GENUS MYZOMYIA, BLANCHARD

Grassia, Theobald, Journ. Trop. Med. Vol. 2, p. 181 (1902).

Myzomyia, Blanchard, C. r. Soc. Biol. Paris. Vol. 23, p. 795 (1902).

Characters. — Thorax and abdomen with hair-like scales, sometimes with a few narrow-curved ones projecting over the head. Palpi not densely scaled, clavate in ♂, thicker in the ♀ than in *Anopheles*. Wings much spotted and marked along the costa; vein-scales small narrowly lanceolate or linear. Mostly small species.

Geographical distribution of species. — This genus occurs in Asia, Africa and a single species in South America and another in Europe. This genus is intimately connected with malaria in Africa and India. The majority prefer slowly running water in the larval stage.

1. *M. funesta*, Giles, Mem. Liv. Sch. Trop. Med. Mem. 2, p. 50 (1900); Hand-Book. of Gnats. p. 162 (1900) (Central and Western Africa, Sudan, Philippine Islands). — **Plate I, Fig. 2.**
var. umbrosa, Theobald, Mem. Liv. Sch. Trop. Med. App. p. vi (1900).
var. subumbrosa, Theobald, idem, p. vi (1900).
2. *M. rossii*, Giles, Journ. Trop. Med. Oct. (1899) (India, Malay States, China, Philippine Islands).
vagus, Dönitz, Beit. Kennt. d'Anop. p. 80 (1902).
3. *M. ludlowii*, Theobald, Mon. Culic. Vol. 3, p. 42 (1903) (Philippine Islands, Malay).
4. *M. rhodesiensis*, Theobald, idem, Vol. 1, p. 184 (1901) (Central Africa).
5. *M. culicifacies*, Giles (♀, non ♂), Ent. Monthly Mag. p. 197 (1901) (Central Provinces, Berars, Madras, India).
listoni, Giles, Ent. Monthly Mag. p. 197 (1901).
indica, Theobald, Mon. Culic. Vol. 1, p. 183 (1901).
culicifacies, Giles, Ent. Monthly Mag. p. 197, ♀ ♂ = *turkhudi*.

6. *M. listoni*, Liston (non Giles). Ind. Med. Gaz. Vol. 36, p. 12 (1901) (India, Federated Malay States).
christophersi, Theobald, Proc. Roy. Soc. Eng. Vol. 69, p. 378 (1902).
fluviatilis, Christophers (1901) ms.
7. *M. longipalpis*, Theobald, Mon. Culic. Vol. 3, p. 37 (1903) (British Central Africa).
8. *M. leptomeres*, Theobald, idem, Vol. 3, p. 38 (1903) (India).
9. *M. lutzii*, Theobald, ibidem, Vol. 1, p. 177 (1901) (Brazil, British Guiana).
10. *M. turkhudi*, Liston, Ind. Med. Gaz. p. 441 (1901) (India).
culicifacies, ♂ Giles, Ent. Monthly Mag. p. 197 (1901).
11. *M. hispaniola*, Theobald, Mon. Culic. Vol. 3, p. 49 (1903) (Spain, Teneriffe).
12. *M. elegans*, James & Theobald, idem, Vol. 3, p. 51 (1903) (Bombay Presidency).
13. *M. punctulata*, Dönitz, Ins. Börse. Vol. 5, 18. 31 p. 37 (1901) (Sumatra, Borneo, New Guinea).
14. *M. tessellata*, Theobald, Mon. Culic. Vol. 1, p. 175 (1901) (Straits Settlements).
punctulatus, Theobald (non Dönitz), Mon. Culic. Vol. 1, p. 175 (1901).
15. *M. leucosphyrus*, Dönitz, Ins. Börse. Vol. 5, p. 37 (1901) (Sumatra, Borneo, New Guinea).
16. *M. albirostris*, Theobald, Mon. Culic. Vol. 3, p. 24 (1903) (Malay States).
17. *M. nili*, Theobald, Rep. Gordon Coll. Lab. Sudan, p. 66 (1904) (Sudan).
18. *M. thurstonii*, Ludlow, Canad. Ent. p. 69 (1904) (Philippine Islands).
19. *M. aconita*, Dönitz, Beitr. z. d. Anopheles, p. 70 (1902) (Sumatra, Java).
20. *M. hebes*, Dönitz, idem, p. 84 (1909) (Dar-Es-Salam, East Africa).
21. *M. kumasi*, Chalmers, The Lancet. Nov. (1900) (Kumasi).

3. GENUS CYCLOLEPPTERON, THEOBALD

Cycloleppteron, Theobald, Mon. Culic. Vol. 2, p. 312 (1901).

Cyclolepidopteron, Blanchard.

Characters. — Thorax with very narrow curved scales, almost hair-like; abdomen with hairs very similar to those on the thorax. Last two joints of ♂ palpi swollen, in the ♀ spatulate. Wings with lanceolate lateral scales and numerous large black inflated scales, their free ends rounded, either grouped in patches or irregularly disposed.

Geographical distribution of species. — Two species only occur in this genus, one from the West Indies, the other from Brazil. They appear to be rather uncommon.

1. *C. grabhamii*, Theobald, Mon. Culic. Vol. 1, p. 205; Vol. 2, p. 312 (1901); Vol. 3, p. 56 (1903) (Jamaica),
2. *C. mediopunctatus*, Theobald (Lutz Ms), Mon. Culic. Vol. 3, p. 60 (1903) (Brazil).

4. GENUS STETHOMYIA, THEOBALD

Stethomyia, Theobald, Journ. Trop. Med. Vol. 5, p. 181 (1902).

Characters. — Head with a patch of flat scales on the middle line and with very thin upright forked scales. Thorax bristly, apparently nude; prothoracic lobes bristly and mammillated. Abdomen pilose, hairs of two sizes, the smaller ones in rows. Palpi of the ♂ much swollen; in the ♀ very long and thin. Legs long and thin.

Geographical distribution of species. — This genus contains but two species, one found in South America, the other in the Malay States.

1. *S. nimba*, Theobald, Mon. Culic. Vol. 3, p. 62 (1903) (British Guiana and Para).
2. *S. fragilis*, Theobald, The Entom. p. 257 (1903) (Federated Malay States).

5. GENUS PYRETOPHORUS, BLANCHARD

Pyretophorus, Blanchard, C. r. Soc. Biol. Paris, n. 23, p. 795 (1902).

Howardia, Theobald, Journ. Trop. Med. Vol. 5, p. 181 (1902).

Characters.—Thorax with narrow-curved scales often rather elongated; abdomen with hair-like curved scales; ♀ lamellae scaly. Head with upright forked scales, narrow-curved scales now and then. Wings with small short lanceolate scales, sometimes appearing narrow; much spotted. Palpi moderately scaly. This genus is at once told from *Myzomyia* to which it is most nearly related by the narrow-curved thoracic scales. They are sometimes quite large species. The larvae frequent puddles and streams.

Geographical distribution of species.—This genus occurs in Africa, India, Australia and Europe. The majority are African.

1. *P. costalis*, Loew, Ent. Zeit. Berl. p. 55 (1866) (Africa, Mauritius).
A. phileas costalis, Loew, Ent. Zeit. Berl. p. 55 (1866).
A. phileas costalis, Giles, Handb. of Gnats (2 ed.), p. 511 (1902).
A. phileas gracilis, Donitz, Beitr. Kenntn. Anoph. p. 76 (1902).
var. melas, Theobald, Mon. Culic. Vol. 3, p. 76 (1903).
2. *P. minimus*, Theobald, Mon. Culic. Vol. 1, p. 186 (1901) (Hongkong).
3. *P. marshallii*, Theobald, idem, Vol. 3, p. 77 (1903) (Mashonaland).
4. *P. chaudoyei*, Theobald, ibidem, Vol. 3, p. 68 (1903) (Algeria).
5. *P. superpictus*, Grassi, Reale Accad. Linc. (Stud. Zool. sulla Malaria), p. 78 (1900) (S. Europe).
6. *P. palestinesis*, Theobald, Mon. Culic. Vol. 3, p. 71 (1903) (Palestine, Cyprus).
7. *P. jeyporensis*, Theobald, idem, Vol. 3, p. 66 (1903) (Jeypore, India).
8. *P. cinereus*, Theobald, ibidem, Vol. 1, p. 161 (1901) (S, W, and Central Africa) (1).
9. *P. atratipes*, Skuse, Proc. Linn. Soc. N. S. Wales. Vol. 3 (2), p. 1755 (N. S. Wales, Queensland).

6. GENUS ARRIBALZAGIA, THEOBALD

Arribalzagia. Theobald, Mon. Culic. Vol. 3, p. 81 (1902).

Characters.—Thorax with curved hair like scales and a few narrow curved ones in front. Abdomen with large apical lateral scale tufts and scaly venter. No ventral apical scaly tuft present. Palpi densely scaled. Wings with thick lanceolate scales.

This genus comes close to the following viz *Myzorhynchus*, but can be told by having distinct lateral scale tufts and no ventral tuft. A single species only so far known.

Geographical distribution of species.—A single species represented by the ♀ only found in Brazil and Trinidad. It is said to be a malaria bearer.

1. *A. maculipes*, Theobald, Mon. Culic. Vol. 3, p. 81 (1903) (Brazil and Trinidad).

7. GENUS MYZORHYNCHUS, BLANCHARD

Myzorhynchus. Blanchard, C. r. Soc. Biol. Paris, Vol. 23, p. 795 (1902).

Russia. Theobald (non Owen, 1823), Journ. Trop. Med. p. 181 (1902).

Characters.—Thorax with hair-like scales; prothoracic lobes with ragged scales. Abdomen with ventral and a few apical scales and ventral apical tuft; no apical lateral tufts. Wing scales broadly or moderately lanceolate, sometimes short and rather broad. Palpi densely scaled in the ♀, also the proboscis. Mostly large dark species. Wild and breeding in swampy places as a rule. The larvae with much branched frontal hairs.

Geographical distribution of species.—Twelve species known. Most occur in Asia, but also in Africa and Europe. They appear to be most abundant in numbers in the Malay Peninsula.

1. *M. barbirostris*, Van der Wulp, Leyd. Mus. Notes Vol. 6, p. 48 (Malay Peninsula; India and Old Calabar, West Africa). **Plate I, Fig. 3.**
2. *M. bancroftii*, Giles, Hd. Book of Gnats (2 ed.) p. 511 (1902) (Queensland).
3. *M. umbrosus*, Theobald, Mon. Culic. Vol. 3, p. 87 (1903) (Malay States).

(1. This species comes in *Myzomyia*.

4. *M. albotaeniatus*, Theobald, idem, Vol. 3, p. 88 (1903) (Straits Settlements).
5. *M. sinensis*, Wiedemann, Ausseurop. Zweifl. Ins. p. 547 (1828) (China, Formosa).
6. *M. vanus*, Walker, Journ. Proc. Linn. Soc. Lond. Vol. 4, p. 91 (1860).
annularis, Theobald (non Van der Wulp) Mon. Culic. Vol. 1, p. 142 (1901).
7. *M. annularis*, Van der Wulp, Leyd. Mus. Notes Vol. 9, p. 249 (1889) (East Java).
8. *M. pseudopictus*, Grassi (Italy).
pictus, Ficalbi, Venti. Spec. Zanz. Ital. (1899).
9. *M. minutus*, Theobald, Mon. Culic. Vol. 3, p. 91 (1903) (Punjaub, India).
10. *M. nigerrimus*, Giles, Hdb. of Gnats. p. 161 (1900) (India).
11. *M. mauritanus*, Grandpré, Les Moustiques. Planters Gaz. Press. (1900) (Mauritius and Central Africa).
paludis var. *similis*, Theobald, Mon. Culic. Vol. 1, p. 129 (1901).
tenebrosus, Dönitz, Beit. Kenntn. Anoph. p. 53 (1902).
12. *M. plumiger*, Donitz, Ins. Börse, Jan. (1901) (Hongkong, East India).
13. *M. paludis*, Theobald, Rep. Mal. Com. Roy. Soc. p. 75 (1800) (West Africa and Central Africa).
14. *M. pseudobarbivirostris*, Ludlow, Journ. New-York, Ent. Soc. Sept. (1902) (Philippine, Islands.)
15. *M. coustani*, Laveran, Arch. de Parasit. Vol. 6, p. 359 (1902) (Madagascar).
16. *M. jesoensis*, Tsuzuki.

8. GENUS CHRISTYA, THEOBALD

Christya. Theobald, Rep. Sleeping Sickness. Vol. 7, p. 34. Roy Soc. (1903).

Characters. — Thorax with hair-like scales and narrow-curved lateral ones; prothoracic lobes with narrow-curved scales. Abdomen with hairs and dense lateral apical tufts and long hair-like scales and other long lateral hairs. Palpi densely scaled. Fork-cells rather short; wings with dense short lanceolate lateral vein scales.

Allied to *Myzorhynchus*, but easily told by the very long lateral tufts of abdominal scales.

Geographical distribution of species. — A single species so far only occurs in this genus.

1. *C. implexa*, Theobald, Rep. Sleeping Sickness. Roy. Soc. Vol. 7, p. 34 (1903).

9. GENUS LOPHOCELOMYIA, THEOBALD

Lophocelomyia. Theobald, The Entom. p. 12 (1904).

Characters. — Thorax with very long curved hair-like scales; prothoracic lobes with a tuft of spatulate scales. Abdomen with hairs, except the last two segments which have lanceolate scales. Head with narrow-curved as well as upright forked scales. Palpi densely scaled. Dense tuft of outstanding scales on the apex of the hind femora. Wings clothed with broadish blunt lanceolate scales.

Allied to following genus but has long curved hair-like scales, not narrow-curved or spindle shaped ones.

Geographical distribution of species. — A single species so far only found, probably others will be found in jungle growths.

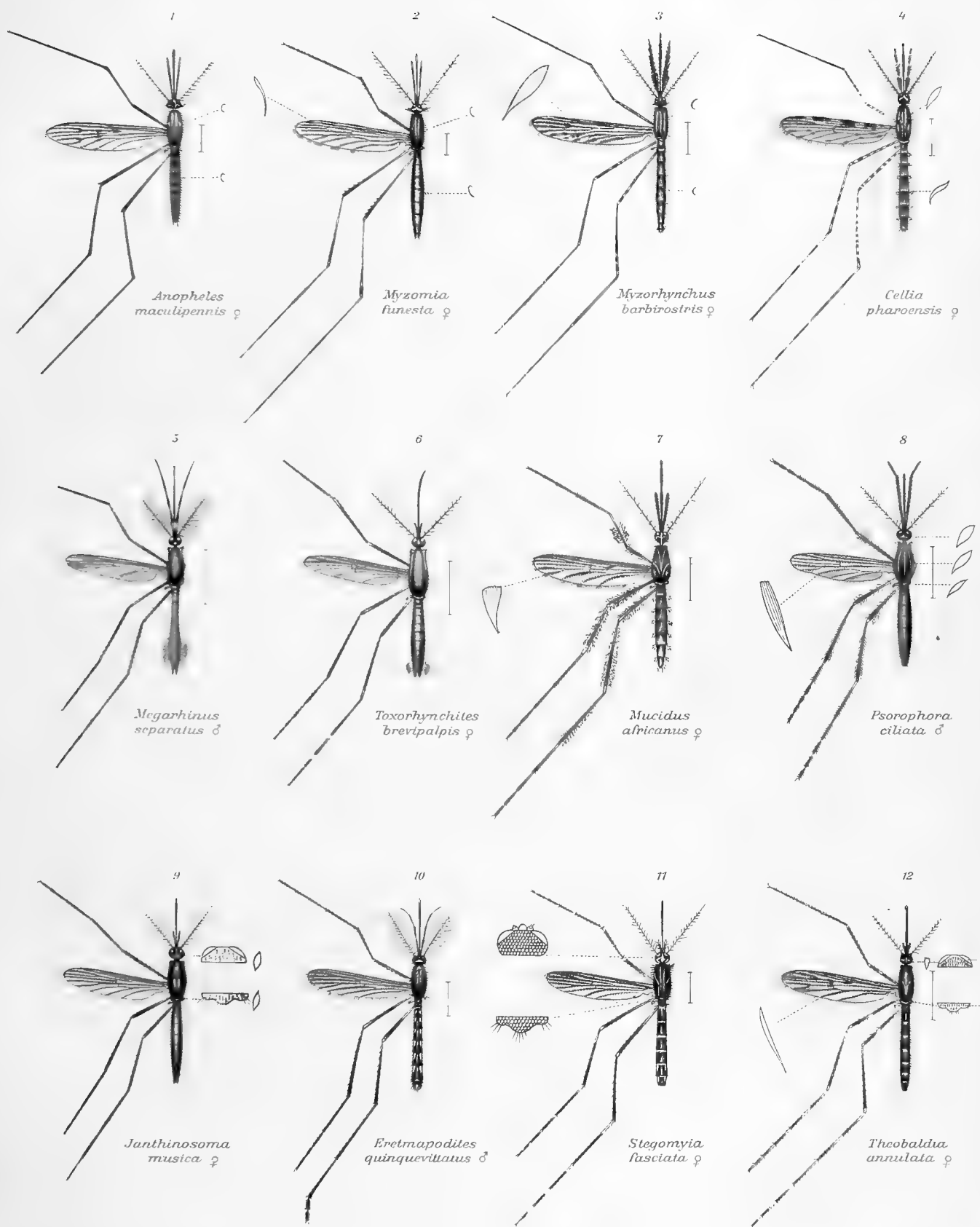
1. *L. asiatica*, Leicester, The Entom. p. 13 (1904) (Ambang Jungle, Kuala Lumpur, Fed. Malay States).

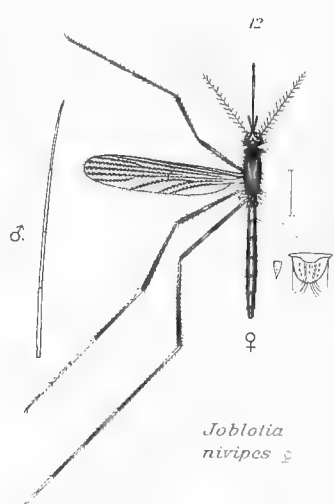
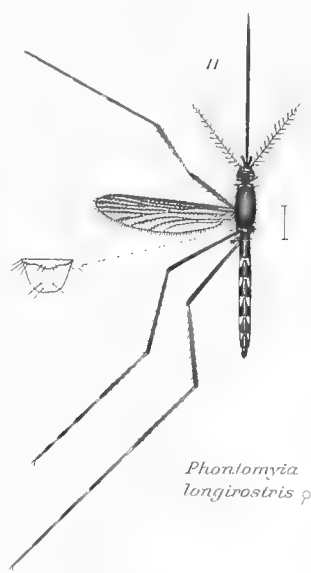
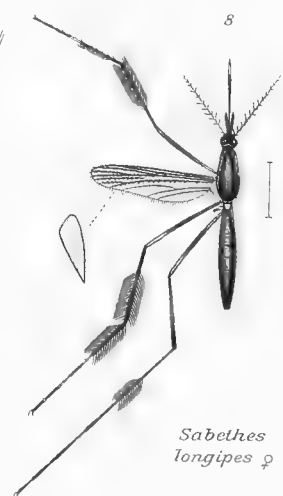
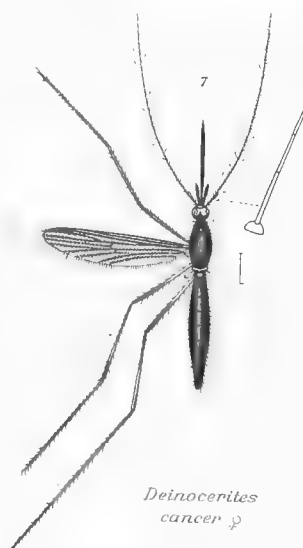
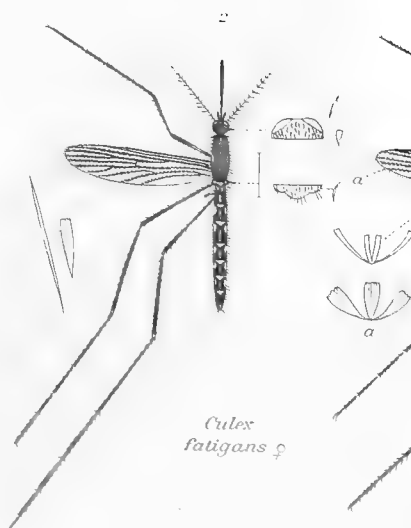
10. GENUS NYSSORHYNCHUS, BLANCHARD

Nyssorhynchus. Blanchard, C. r. Soc. Biol. Paris. Vol. 23, p. 795 (1902).

Laverania. Theobald, Journ. Trop. Med. (1902).

Characters. — Thorax with narrow-curved and spindle shaped scales. Abdomen with scales on the venter and with dorsal patches on the apical segments. Legs banded and spotted with white,





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the hind tarsi usually with one or more pure white segments. Wing scales bluntly lanceolate, short, some more elongate and narrow. Adults mostly domestic, a few sylvan. Larvae mostly pot and puddle breeding species, a few breed in marshes.

Geographical distribution of species. — This genus contains some 13 species found in Asia and Africa only.

1. *N. maculatus*, Theobald, Mon. Culic. Vol. 1, p. 171 (1901) (India, Federated Malay States).
2. *N. theobaldi*, Giles, Ent. Mon. Mag. p. 198 (1901) (India, Aden Hinterland).
3. *N. stephensi*, Liston, Ind. Med. Gaz. Vol. 36, p. 12, Dec. (1901) (India).
metaboles, Theobald, Proc. Roy. Soc. Lond. Vol. 69, p. 374 (1902).
4. *N. fuliginosus*, Giles, Hd. Book of Gnats, p. 160 (1900) (India, Federated Malay States).
jamesii, Liston (non Theobald), Ind. Med. Gaz. p. 411 Dec. (1901).
leucopus, Donitz, Ins. Börse, p. 37 (1901).
5. *N. maculipennis*, Giles, Hd. Book of Gnats. (2 ed.) p. 297 (1902) (India, Mauritius, Mashonaland).
var. indiensis, Theobald, Mon. Culid. Vol. 3, p. 99 (1903) (India).
6. *N. pretoriensis*, Theobald, idem, Vol. 3, p. 99 (1903) (Pretoria).
7. *N. willmori*, James, Mon. Culid. Vol. 3, p. 100 (1904) (Kashmir).
8. *N. karwari*, James, idem, Vol. 3, p. 102 (1903) (Karwar, Goa).
9. *N. annulipes*, Walker, Ins. Saund. Vol. 1, p. 433 (1850) (Australia).
10. *N. masteri*, Skuse, Proc. Linn. Soc. N. S. Wales, p. 1757 (1889) (Australia).
11. *N. nivipes*, Theobald, The Entom. p. 258 (1903) (Federated Malay States).
12. *N. jamesii*, Theobald, Mon. Culic. Vol. 1, p. 134 (1901) (South India).
13. *N. philippinensis*, Ludlow, Journ. New York. Ent. Soc. Vol. 10, p. 128 (Sept. 1902) (Philippine Islands).

11. GENUS CELLIA, THEOBALD

Cellia. Theobald, Mon. Culid. Vol. 3, p. 107 (1903).

Characters. — Thorax with flat spindle shaped scales; abdomen more or less covered with long narrow-curved or spindle shaped scales irregularly disposed and with dense lateral tufts; palpi of ♀ densely scaly. Wing scales large, bluntly lanceolate; densely scaled.

This genus is easily told by the dense irregular abdominal scales.

Geographical distribution of species. — Six species only occur and are limited to Africa, India, the West Indies, East Indies and South America.

Two species at least are connected with malaria (*pharoensis* and *argyrotarsis*).

1. *C. pharoensis*, Theobald, Mon. Culic. Vol. 1, p. 169 (1901) (Central, Western and Northern Africa and Palestine). — Plate I, Fig. 4.
2. *C. pulcherrima*, Theobald, Proc. Roy. Soc. Lond. Vol. 69, p. 369 (1902) (Lahore, India).
3. *C. squamosa*, Theobald, Mon. Culic. Vol. 1, p. 167 (1901) (Central Africa, S. and W. Africa).
4. *C. kochii*, Donitz, Ins. Börse, Vol. 5, p. 1831, Jan. (1901) (Fed. Malay States; Sumatra, Java, Philippine Islands).
5. *C. argyrotarsis*, Robineau-Desvoidy, Essai sur les Culicid. p. 411 (1827) (West Indies and S. America).
argyrotarsis, Arribalzaga, Dipt. Argent. p. 36 (1901).
ibimanus, Wiedemann, Aussereurop. Zweifl. Ins. p. 13 (1828).
6. *C. albipes*, Theobald, Mon. Culic. Vol. 1, p. 125 (1901) (West Indies, Brazil, British Guiana).

12. GENUS ALDRICHIA, THEOBALD

Aldrichia. Theobald, Mon. Culic. Vol. 3, p. 353 (1903).

Characters. — Thorax with narrow-curved, almost hair-like scales; outstanding flat scales on the prothoracic lobes. Abdomen with complete armour of large flat scales in *Culex*. Head with large and broad upright scales.

Geographical distribution of species. — A single species, represented by a single specimen only known.

1. *A. error*, Theobald, Mon. Culic. Vol 3, p. 353 (1903) (India).

GENUS UNCERTAIN.

1. *Anopheles vincenti*, Laveran, C. r. Soc. Biol. Paris, 53, p. 993 (1901) (Tonkin).
2. *A. faranti*, Laveran, idem, 54, 908 (1902) (New Hebrides).
3. *A. porsati*, Laveran, ibidem, 54, p. 906 (1902) (Cambodia).
4. *A. formosaensis*, Tsuzuki.
5. *A. pictus*, Loew. Dipt. Beitr. (1845) (Isle of Rhodes, Asia-Minor).
6. *A. (? Nyssorhynchus) deceptor*, Dönitz, Beit. Kenntn. Anoph. p. 60 (1902) (Sumatra).
7. *A. (? Myzomyia) impunctus*, Dönitz, idem, p. 67 (1902) (Wadi-Natron).
8. *A. (? Pyrethophorus) merus*, Dönitz, Beit. Kenntn. Anoph. p. 77 (1902) (East and S. W. Africa).
9. *A. annulimanus*, Van der Wulp, Tijdschr. v. Ent. p. 127 (1867) (North America).
10. *A. annulipalpis*, Arribalzaga, Et. Nat. Arg. Vol. 1, p. 149 (1878) (Buenos-Ayres and Parana river, South America).
11. *A. ziemanni*, Grünberg, Zool. Anz. Vol. 25, p. 550 (1901) (Cameroons).
12. *A. martini*, Laveran, C. r. Soc. Biol. Vol. 54, p. 906 (1902) (Cambodia).
13. *A. eiseni*, Coquillett, Journ. New-York. Ent. Soc. Vol. 10, p. 192 (Guatemala).
14. *A. (Pyrethophorus ?) pitchfordi*, Giles (Zululand) (1).

2. SUBFAM. MEGARHININÆ, THEOBALD

This subfamily can be told from the following in which the palpi are long in both sexes by the very small first submarginal cell and curiously bent proboscis. They are all large insects with brilliant coloration and caudal tufts. They are frequently spoken of as Elephant mosquitos. The scale structure differs widely from that of the *Anophelinæ*, the head especially. In scale structure and general appearance they resemble the next subfamily *Toxorhynchitinae* but the ♂'s of the latter have short palpi.

Characters. — Head densely clothed with flat scales and some upright forked scales; palpi in the ♂ long, acuminate, in the ♀ not so long as the ♂. Proboscis much curved. Antennæ of ♂ plumose, of ♀ verticillate, basal joints scaly. Thorax clothed with spindle shaped scales, broader flat ones at the sides and over base of wings; scutellum clothed with flat scales; metanotum nude; prothoracic lobes with flat scales. Abdomen covered with flat scales and with a caudal fan of fine hair like scales always present in the ♂. Wings with very small fork-cells, the first submarginal being very small, the stems of the fork-cells very long; in the ♂ the wings are longer and narrower than in the ♀; supernumerary cross-vein nearer the apex of the wing than the mid. Ungues of ♀ equal and simple, of ♂ unequal on fore and mid legs, the larger always toothed.

This subfamily at present contains only one genus (*Megarhinus*). The species are only found in tropical and warmer subtropical countries.

1. GENUS MEGARHINUS, ROBINEAU-DESVOIDY

Megarhinus. Robineau-Desvoidy, Essai sur les Culic. (Mém. Soc. Hist. Nat. Paris), Vol. 3, p. 412 (1827).

Characters. — Same as those of the subfamily. The members present most beautiful metallic coloration. Some are said to bite severely. They are mostly confined to South America, West Indies, Malay States and East Indies. Most are purely sylvan in habits. Larvae with siphon.

(1) The type is in the British Museum, but I cannot find any description.

Geographical distribution of species. — It is extremely difficult to tell ♂ specimens from ♂'s of the next subfamily as the ♂ characters are practically the same both in regards to scale ornamentation, venation and palpi.

1. *M. haemorrhoidalis*, Fabricius, Ent. Syst. Vol. 6, p. 401, f. 5 (1794) (Brazil, Mexico, Guiana, Cuba).
2. *M. separatus*, Arribalzaga, Dipt. Argent. p. 33 (1891) (Brazil, French Guiana, Argentine).— **Plate I, Fig. 5.**
3. *M. trichopygus*, Wiedemann, Ausseurop. Zweifl. Ins. p. 4 (1828) (Brazil).
4. *M. violaceus*, Hoffmannseg, Dipt. Exot. p. 7, Wiedemann (1821) (Brazil).
purpureus, Theobald, Mon. Culic. Vol. 1, p. 230 (1901).
5. *M. portoricensis*, von Röder, Ent. Zeit. Stett. p. 337 (1885) (Georgia, Porto Rico, Grenada, St.-Vincent, Mississippi, St. Domingo, Para).
6. *M. splendens*, Wiedmann, Dipt. Exot. p. 7 (1821) (Java, Sumatra, Batavia, Singapore).
7. *M. ferox*, Wiedemann, Ausseurop. Zweifl. Ins. p. 1 (1828) (Brazil, Bogota).
8. *M. rutilus*, Coquillett, Canad. Ent. p. 44 (1896) (North Carolina, Georgia, Florida).

M. grandiosus, White, Trans. Ent. Soc. Cent. Am., vol. 1, p. 224 (Mexico).

GENUS UNCERTAIN

(*Megarhinus* or *Toxorhynchites*)

- M. amboinensis*, Doleschall, Nat. Tijdschr. Ned. Indie, Vol. 14, p. 381 (Amboina).
M. christophii, Portschinsky, Hor. Soc. Ent. Ross. p. 122 (1883) (Amur, Central Asia).
M. longipes, Theobald, Mon. Culic. Vol. 1, p. 241 (1901) (Mexico).
M. lutescens, Théobald, idem, Vol. 1, p. 233 (1901) (Mashonaland).

3. SUBFAM. TOXORHYNCHITINÆ, NOV. SUBFAM.

This subfamily differs from the preceding in that the ♀'s have the palpi short and rather thick; differences as great as those between the *Anophelinae* and *Culicinae*. Both species with caudal tufts and species devoid of this form of ornamentation occur and it is probable that two genera founded on this character should be formed. Several species previously supposed to belong to *Megarhinus* (the species having been founded on the ♂'s only) are now included here. A single genus occurs.

1. GENUS TOXORHYNCHITES, THEOBALD

Toxorhynchites. Theobald, Mon. Culic. Vol. 1, p. 244 (1901).

Characters. — Head clothed with flat scales and a few upright forked scales. Thorax with small flat spindle shaped scales and long spatulate scales; scutellum clothed with long flat scales. Metanotum nude. Abdomen clothed with flat scales, with or without a caudal tuft. Venation as in *Megarhinus*. Palpi of ♂ long; of ♀ short and thick, composed of three segments. Proboscis curved as in *Megarhinus*.

The genus occurs in Africa, Asia, East Indies and Australia.

Geographical distribution of species. — The most widespread species is *immisericors* Walker which is extremely variable, it occurs from Ceylon up India to the Malay States and East Indies and I am inclined to think that the Australia *Speciosa* Skuse is only a variety of Walker's species. Africa also seems the home of this genus.

None have so far occurred in South America where its place is taken by *Megarhinus*.

1. *T. brevipalpis*, Theobald, Mon. Culic. Vol. 1 p. 245 (1901) (Natal). — **Plate I, Fig. 6.**
2. *T. leicesteri*, Theobald, The Entom. p. 36 (1904) (Kuala Lumpur, Fed. Malay States).
3. *T. metallicus*, Leicester, idem, p. 37 (1904) (Kuala Lumpur, Fed. Malay States).
4. *T. marshallii*, Theobald, Mon. Culic. Vol. 3, p. 121 (1903) (Mashonaland).
5. *T. speciosus*, Skuse (*Maclean mss*), Proc. Linn. Soc. N. S. Wales, p. 1722 (1889) (Queensland).

6. *T. immisericors*, Walker, Journ. Proc. Linn. Soc. Lond. Vol. 4, p. 91 (1860) (Ceylon, India, Malay Peninsula and East Indies).
subulifer, Dolleschall, Nat. Tijdschr. Ned. Ind. Vol. 14, p. 382.
gilesii, Theobald, Mon. Culic. Vol. 1, p. 227 (1901).
regius, Thwaites, Nat. Hist. Ceylon, Tennant, p. 434 (1861).
7. *T. inornatus*, Walker, Journ. Proc. Linn. Soc. Lond. Vol. 8, p. 102 (New Guinea).

4. SUBFAM. CULICINÆ, THEOBALD

This is the largest subfamily and contains a number of diverse genera. They can easily be seen to belong to this group, by the short ♀ palpi and long ♂ palpi. They most nearly approach the Toxorhynchitinae in this respect, but the longer first submarginal cell at once separates them.

Characters. — Head clothed with all flat scales (*Stegomyia*) or a mixture of flat, narrow-curved and upright forked ones. Palpi long in the ♂, either clavate (*Theobaldia*, etc) or acuminate (*Culex*, etc); in the ♀ short and composed of 3 to 5 segments. Proboscis straight and moderately thick. Wings with moderately long fork-cells, the first submarginal as long or longer than the second posterior cell in the ♀; scales of various forms in the different genera. Ungues of the ♀'s equal, simple or uniserrated; of the ♂'s the fore are unequal, simple uni- or biserrated. The chief distinguishing characters are (1) the palpi and (2) the venation.

The subfamily contains 30 genera.

TABLE OF GENERA

A. Legs ornamented with dense outstanding scales.

α Head clothed with sprindle shaped and broad curved scales.

1. Hindlegs only densely scaled 1. Genus JANTHINOSOMA, Arribalzaga.

All the legs more or less densely scaled.

- Wings scales thin 2. Genus PSOROPHORA, Robineau-Desvoidy

- Wings scales large inflated, parti-colored. Body
and head with very long twisted scales 3. Genus MUCIDUS, Theobald.

αα. Head clothed with flat scales. Scutellum with flat scales.

- Wings with dense scales apically. Hind legs of ♀
with scaly paddles 4. Genus ERETMAPODITES, Theobald.

B. Legs normal, no irregular scales.

α Head clothed with flat and upright forked scales only.

β Scutellum with flat scales.

- Male palpi long thin nude and acuminate. Large 5. Genus DESVOIDYA, Theobald.

- Male palpi thin acuminate or clavate. Small 6. Genus STEGOMYIA, Theobald.

ββ Scutellum with narrow-curved scales. 7. Genus SKUSEA, Theobald.

αα. Head clothed with mostly flat scales but also with small areas of narrow-curved scales and upright forked ones.

γ Scutellum with all flat scales. Palpi of ♀ short.

- Head with median row of narrow-curved scales 8. Genus SCUTOMYIA, Theobald.

- Head with narrow-curved scales behind 9. Genus ÆDIMORPHUS, Theobald.

- Palpi of ♀ half length of proboscis

- Head with flat scales except for some spindle shaped ones around the eyes.* 10. Genus LEICESTERIA, Theobald.
- ΥΥ *Scutellum with flat scales to mid lobe narrow-curved ones to lateral lobes.* 11. Genus MACLEAYA, Theobald.
- ΥΥΥ *Scutellum with large spindle shaped scales.* 12. Genus HULECOETOMYIA, Theobald.
- ΥΥΥΥ *Scutellum with small flat scales on mid lobe, narrow-curved ones on lateral lobes.* 13. Genus PHAGOMYIA, nov. gen.
- ΥΥΥΥΥ *Scutellum with spindle shaped scales on mid lobe, flat ones on lateral lobes.* 14. Genus POLYLEPTIOMYIA, nov. gen.
- ΥΥΥΥΥΥ *Scutellum with narrow-curved scales all over.*
- ♂ *Head with flat scales except for a median triangular narrow-curved scale area.* 15. Genus HOWARDINA, Theobald.
- ♂♂ *Head with all flat scales except along the nape.* . . . 16. Genus DANIELSIA, Theobald.
- ♂♂♂ *Head with narrow-curved scales around the eyes.* . . 17. Genus LEPIDOTOMYIA, nov. gen.
- xxx *Head with loose irregular flat scales and narrow-curved ones behind.*
- Scutellum with flat median scales and narrow-curved lateral ones.* 18. Genus CATAGEIOMYIA, Theobald.
- xxxx *Head with broad flat spindle shaped scales. Scutellum with small flat scales.*
- Vein scales of Taeniorhynchus type.* 19. Genus GILESIA, Theobald.
- xxxxx *Head and scutellar scales narrow-curved only, except at the sides of the head where they are flat.*
- ♂. *Abdomen clothed with flat scales only.*
- I. *Legs uniform, femora not enlarged at all.*
- Palpi of ♂ clavate. Wings with lanceolate scales united into dense spots.* 20. Genus THEOBALDIA, Neveu-Lemaire.
- Wings with rather thick median scales and short broadish lateral ones. Fork-cells small; scales mottled.*
- Head with broad narrow-curved scales and forked ones.* . . 21. Genus GRABHAMIA, Theobald.
- Head with irregular flat scales dotted all over giving a ragged appearance.* 22. Genus ACARTOMYIA, Theobald.
- Palpi of ♂ acuminate. Wings ornamented with various colored patches. Scales partly Culex like partly Taeniorhynchus-like.* 23. Genus LUTZIA, Theobald.
- Wings with narrow linear or lanceolate scales.*
- Fork-cells long in the ♀.* 24. Genus CULEX, Linnæus.
- Wings with elongated broadish scales. Fork-cells long.* . . 25. Genus TAENIORHYNCHUS, Arribalzaga.
- Wings with large broad and asymmetrical scales.* 26. Genus MANSONIA, Blanchard.
- II. *Femora and tibiae swollen apically and basally.*
- Wing scales small, dense and broad at the apices of the veins. Small black gnats.* 27. Genus MELANOCONION, Theobald.
- ♂♂ *Abdomen with large flat projecting lateral scales, with deeply dentate apices, in more or less dense tufts.*
- Wing scales of Culex type.* 28. Genus LASIOCONOPS, Theobald.
- ♂♂♂ *Abdomen with scaly ventral tufts.*
- Wings scales pyriform, dense and mottled.* 29. Genus FINLAYA, Theobald.

1. GENUS JANTHINOSOMA, ARRIBALZAGA*

Janthinosoma. Arribalzaga, Dipt. Argent. p. 52 (1891).

Characters. — Head covered with rather broad spindle-shaped scales and upright forked ones. Thorax with short, broad spindle-shaped scales and also the scutellum. Male palpi long, longer than the proboscis, both ♂ and ♀ palps densely scaly. Hind legs always densely scaly, giving the insects a characteristic appearance, one or more of the hind tarsi always white; unguis of ♀ very thick, uniserrated, fore and mid in the ♂ unequal, serrated.

They are all somewhat metallic when fresh.

Geographical distribution of species. — So far this genus has only been found in South America, the West Indies and the South of North America. Five species are known.

1. *J. musica*, Say, Journ. Acad. Nat. Sc. Philad. Vol. 6, p. 149 (South America, Trinidad, Indiana). —

Plate I, Fig. 9.

Culex musicus, Say.

mexicanus, Bellardi.

2. *J. posticata*, Wiedemann, Aussereurop. Zweifl. Ins. p. 9 and Dipt. Exot. Vol. 1, p. 43.2 (1828) (St Lucia, Argentine).

Culex posticatus, Wiedemann.

3. *J. lutzii*, Theobald, Mon. Culic. Vol. 1, p. 257 (1901) (Brazil, British Guiana, Trinidad).

4. *J. discrucians*, Walker, Ins. Saund. p. 140 (1856) (South America (Walker); Trinidad).

Culex discrucians, Walker.

non *J. discrucians*, Arribalzaga.

5. *J. arribalzaga*, Giles, Hdb. of Gnats. 2^d ed. p. 341 (Brazil, Argentine).

discrucians, Arribalzaga, Dipt. Arg. p. 53 (1855).

6. *J. varipes*, Coquillett, Canad. Ent. p. 10 (1904) (Fort Simpson, B. C. Canada).

Conchylastes varipes, Coquillett.

2. GENUS PSOROPHORA, ROBINEAU-DESVOIDY

Psorophora. Robineau-Desvoidy, Essai Culic. p. 412 (1827).

Characters. — Head covered with small broad curved scales and upright forked ones; mesothorax with curved scales in the middle and short broad ones laterally. Palpi long in the ♂, of 5 segments, longer than the proboscis; in the ♀ short, never more than half the length of the proboscis, composed of four segments (? 5). Proboscis short and thick in the ♂; longer and bent in the ♀. Prothoracic lobes have appendages which protect the stigmata of that area. Legs with the apices of the femora and tibiae and to some extent the metatarsi with long scales; unguis of ♀ thick, equal uniserrated. Wings with rather long thin lateral vein-scales; first submarginal only a little longer than the second posterior cell; posterior cross-vein close to the mid but usually a little nearer the base of the wing than the mid.

This genus can at once be told by the arrangement of the thoracic scales, and the densely scaled legs.

Geographical distribution of species. — So far as at present known this genus is confined to North and South America and the West Indies.

1. *P. ciliata*, Fabricius, Ent. Syst. Vol. 4, p. 401 (1794) (North America and Brazil). — **Plate I, Fig. 8.**

perterrens, Walker, Ins. Saund, p. 431 (1856).

boscii, Robineau-Desvoidy, Essai Culic. p. 413 (1827).

molestus, Wiedemann, Dipt. Exot. Vol. 7, p. 4 (1821).

centaurus, Walker, Brit. Mus. Coll. (Ms. name).

* Howard and Coquillett, place these insects in a genus *Conchylastes*, a *ms* term used by me before I had fixed the genus but never published — there is no such genus.

2. *P. holmbergii*, Arribalzaga, Dipt. Argent. p. 40 (1891) (Argentina, Brazil).
3. *P. scintillans*, Walker, Dipt. Brit. Mus. Vol. 1, p. 1 (1848) (Amazon region, Para, Trinidad).
Sabethes scintillans, Walker.
4. *P. howardii*, Coquillett, Canad. Ent. p. 258 (1901) (South Carolina).

3. GENUS MUCIDUS, THEOBALD

Mucidus. Theobald, Mon. Culic. Vol. 1, p. 268 (1901).

Characters. — Head clothed with narrow-curved, upright forked and long twisted scales. Thorax with narrow-curved and long twisted scales with expanded heads. Abdomen with dense ragged scales, which stand out from the surface. Legs densely scaled with projecting scales; unguis of ♀ small, thick, equal and uniserrated. Wings ornamented, scales broadly pyriform and particolored, venation as in *Culex* but the posterior cross-vein is nearer the apex of the wing than the mid cross-vein. Palpi of ♀ half as long as the proboscis; of the ♂ a little longer. Large mouldy looking species, easily told by the twisted head and thoracic scales and the wing scales.

Geographical distribution of species. — This genus is represented in India, East Indies, Australia and Africa. So far no representatives are known to occur in the Americas.

1. *M. alternans*, Westwood, Trans. Ent. Soc. Lond. Vol. 3, p. 384 (1835) (Queensland, New South Wales, Natal?).

C. m. alternans, Walker, Ins. Saund. Dipt. p. 422 (1856).

hispidus, Skuse, Trans. Linn. Soc. N. S. Wales, p. 1726 (1891).

Culex alternans, Westwood.

2. *M. africanus*, Theobald, Mon. Culic. Vol. 1, p. 274 (1901) (West Africa, Central Africa, Sudan). —

Plate I, Fig. 7.

3. *M. mucidus*, Karsch, Ent. Nachr. p. 25 (1887) (Swan River, Delagoa Bay, Whydah, West Africa).

Culex mucidus, Karsch.

4. *M. scataphagoides*, Theobald, Mon. Culic. Vol. 1, p. 277 (1901) (Burma, N. W. Provinces, India).

5. *M. laniger*, Wiedemann, Dipt. Exot. p. 9 (1821) (Java).

Culex laniger, Wiedemann.

4. GENUS ERETMAPODITES, THEOBALD

Eretmapodites. Theobald, Mon. Culic. Vol. 1, p. 280 (1901).

Characters. — Head clothed with flat and upright forked scales. Mesothorax with curved like scales; scutellum with flat scales on the mid lobe. Abdomen clothed with flat scales, somewhat flattened laterally and expanded apically in the ♂. Legs rather long the last two segments of the hind legs in the ♂ densely scaled forming a distinct paddle. Palpi of ♂ long and thin, acuminate, no hair tufts; in the ♀ short of 4 segments. Wings with *Culex* venation, scales dense and broad.

Geographical distribution of species. — There may be two species amongst the specimens in the British Museum, but the only difference I can detect is that some ♂'s have no paddles and as these may have been rubbed off I have only definitely described one species, particularly as they were all collected in the same place.

1. *E. quinquevittatus*, Theobald, Mon. Culic. Vol. 1, p. 280 (1901) (West and Central Africa). — Plate I, Fig. 10.

2. *E. austenii*, n. sp. ? (Doubtfully distinct).

5. GENUS DESVOIDYA, BLANCHARD (1)

Desvoidya. Blanchard, C. r. Soc. Biol. Paris, n° 37, liii (1901).

Armigeres. Theobald, Mon. Culic. Vol. 1, p. 322 (1901).

1 This is spelt *Desvoidia* by Blanchard.

Characters. — Head clothed with flat scales and a few upright forked ones. Thorax with narrow-curved and long almost hair like scales; scutellum with flat scales only. Legs longish and simple. Palpi of the ♂ thin, acuminate, with a few bristles, no hair tufts; those of ♀ short. The wings have the third long vein carried on through the basal cell; subcostal and first long vein densely scaled with rather broad scales. Closely related to *Stegomyia* but differ in ♂ palpi, venation and general appearance. Larvae and pupae distinct from *Stegomyia*; they have short, barrel shaped siphons.

Geographical distribution of species. — Three species are known. At present the genus is confined to Asia and the East Indies.

1. *D. obturbans*, Walker, Proc. Linn. Soc. Lond. Vol. 4, p. 91 (1860) (Ceylon, S. and N. India, Malay Peninsula, East Indies, China, Japan, Formosa, Philippines Islands).
ventralis, Walker, Proc. Linn. Soc. Lond. Vol. 5, p. 144 (1860).
Culex obturbans, Walker.
2. *D. panalectros*, Theobald, Mon. Culic. Vol. 2, p. 317 (1901) (Calcutta, Perak).
3. *D. fusca*, Theobald, idem, Vol. 3, p. 135 (1903) (Kuala Lumpur, Philippines Islands).

6. GENUS STEGOMYIA, THEOBALD

Stegomyia. Theobald, Mon. Culic. Vol. 1, p. 283 (1901).

Characters. — Head covered with flat scales all over and a few upright forked scales. Thorax with narrow-curved and almost spindle-shaped scales, scutellum with broad flat scales only. Palpi of ♀ short, small; ♂ palpi rather thick with scanty tufts. Venation as in *Culex* but the fork-cells are rather small. Scales of the wings broader than in *Culex*, dense as the apical portions of the veins.

Larvae with rather short thick respiratory siphons. Eggs laid singly. One species (*fasciata*) is the yellow fever carrier.

Geographical distribution of species. — The genus occurs in tropical, subtropical and warmer temperate zones, to about 48° on each side of the Equator.

1. *S. fasciata*, Fabricius, Syst. Antl. 36.13 (1805) (N. and S. America, West Indies, Asia, Australia, Most Oceanic Islands, S. Europe, Africa). — **Plate I, Fig. 11.**
frater, Robineau-Desvoidy, Essai Culic. p. 407 (1827).
taeniatus, Wiedemann, Ausseuroop. zweifl. Ins. p. 10 (1828).
konuoupi, Brullé, Ann. Soc. Nat. Paris, Vol. 23 (1831) (Morea).
formosus, Walker, List Dipt. Brit. Mus. p. 4 (1848).
excitans, Walker, Ins. Saund. p. 430 (1856).
viridifrons, Walker, List Dipt. Brit. Mus. p. 3 (1848).
inexorabilis, Walker, idem, p. 4 (1848).
annularis, Macquart, Dipt. Exot. Vol. 1, (1836).
zonatipes, Walker, Proc. Linn. Soc. Lond. Vol. 2, p. 229.
exagitans, Walker, Ins. Saund. p. 430 (1856).
impatabilis, Walker, Journ. Proc. Linn. Soc. Lond. Vol. 3, p. 91 (1860).
bancroftii, Skuse, Proc. Linn. Soc. N. S. Wales, Vol. 3, p. 1740 (1886).
mosquito, Arribalzaga, Dipt. Arg. p. 60 (1891).
elegans, Ficalbi, Bull. Soc. Ent. Ital. p. 251 (1896).
rossii, Giles, Journ. Trop. Med. p. 64 (1899).
toxorhynchus, Macquart, Dipt. Exot. Vol. 1, p. 25 (1838).
calopus, Meigen, Syst. Besch. Europ. Zweit. Ins. Vol. 1, p. 3 (1818)?
var. mosquito, Robineau-Desvoidy, Ess. Culic. p. 407 (1827).
var. luciensis, Theobald, Mon. Culic. Vol. 1, p. 195 (1901).
var. queenslandensis, Theobald, Mon. Culic. Vol. 1, p. 297 (1901).
2. *S. africana*, Theobald, Mon. Culic. Vol. 1, p. 304 (1901) (West and Central Africa).
3. *S. thomsoni*, nov. sp. (1) (N. W. Provinces, India).

(1) *Stegomyia thomsoni*, nov. sp.

Front of mesothorax pure silvery white, with a brown eye like spot on each side, remainder of mesonotum with many white scales, but with some yellowish-brown ones over the roots of the wings. Head silvery white. Proboscis black with a broad median white band. Abdomen blackish with basal white dagger-shaped median patches; fore legs brown with a white spot on the base of the metatarsi; mid legs with metatarsi white basally and apically, also the first tarsal; hind legs with white apical femoral spot, a white spot on basal half of the tibia, base of metatarsus broadly white and the other segments with basal white bands. Length 3-5 mm. Habitat; N. W. Provinces, India.

4. *S. grantii*, Theobald, Mon. Culic. Vol. 1, p. 306 (1901) (Sokotra).
5. *S. nigeria*, Theobald, idem, Vol. 1, p. 303 (1901) (Bonny, W. Africa),
6. *S. crassipes*, Van der Wulp, Dipt. Midd. Sumatra, p. 9 (Burma and Soeroelangoen).
Culex crassipes, Van der Wulp.
7. *S. argenteopunctata*, Theobald, Mon. Culic. Vol. 1, p. 316 (1901) (Mashonaland).
8. *S. punctolateralis*, Theobald, The Entom. Vol. 36, p. 156 (1903) (Queensland).
9. *S. brevifalpis*, Giles, Handb. of Gnats. (2 ed.) p. 384 (N. W. Provinces, India).
10. *S. signifer*, Coquillett, Canad. Ent. Vol. 28, p. 43 (1896).
11. *S. amesii*, Ludlow, Journ. New York Ent. Soc. p. 139 (1903) (Philippine Islands).

7. GENUS SKUSEA, THEOBALD

Skusea. Theobald, Mon. Culic. Vol. 3, p. 291 (1903),

Characters. — Head with flat scales all over and some upright forked ones. Scutellar scales narrow and curved. Wings with denser scales on the branches of the first submarginal and the second posterior and its stem. Palpi of ♀ short, of 3 segments, of the ♂ acuminate, hairy.

Allied to the preceeding but can at once be told by the narrow-curved scutellar scales.

Geographical distribution of species. — Four species are known. Two occur in abundance in the East Indies and Australia.

1. *S. funerea*, Theobald, Mon. Culic. Vol. 3, p. 292 (1903) (Queensland and East Indies).
2. *S. multiplex*, Theobald, idem, Vol. 3, p. 293 (1903) (Queensland and East Indies).
3. *S. pemaensis*, Theobald, ibidem, Vol. 2, p. 235 (1901) (Pemba Island, East Africa).
Aedes pemaensis, Theobald.
4. *S. diurna*, Theobald, The Ent. p. 259 (1903) (Kuala Lumpur).

8. GENUS SCUTOMYIA, THEOBALD

Scutomyia, Theobald, The Entom. p. 77 (1904).

Characters. — Head covered with flat scales except in the mid region, where there are narrow curved scales forming a median row. Scutellum entirely clothed with flat scales.

This genus differs from *Stegomyia* in having narrow-curved scales on the head and from *Macleaya* in having the scutellum with all flat scales.

Geographical distribution of species. — Five species are known, occurring in Africa, Australia, Malay States and Philippine Islands.

1. *S. sugens*, Wiedemann, Aussereurop. Zweifl. Ins. p. 545 (1828) (West and Central Africa).
vittatus, Bigot, Ann. Ent. Soc. Fr. S. 4, Vol. 1 (1861).
Culex sugens, Wiedemann.
2. *S. marshallii*, Theobald, Mon. Culic. Vol. 1, p. 310 (1901) (Central Africa).
3. *S. notoscripta*, Skuse, Proc. Linn. Soc. N. S. Wales. Vol. 3, p. 1738 (1889) (Australia).
albopictus, Skuse, Indian Mus. Notes, Vol. 35, p. 20.
culex notoscriptus, Skuse.
subspecies Samarensis, Ludlow, Journ. New York Ent. Soc. p. 138 (1903).
4. *S. nivea*, Ludlow, Journ. New York Ent. Soc. Vol. 11, p. 139 (1903) (Philippine Islands, Fed. Malay States).
5. *S. albolineata*, Theobald, The Entom. p. 77 (1904) (Kuala Lumpur).

9. GENUS AEDIMORPHUS, THEOBALD

Aedimorphus, Theobald, Mon. Culic. Vol. 3, p. 290 (1903).

Characters. — Head clothed with flat scales all over except behind where they are narrow

curved scales; there are also upright forked scales; Scutellum with flat scales only. Mesothorax with curved hair-like and narrow-curved scales. Metanotum nude. Fork-cells moderately long; first submarginal longer and narrower than the second posterior cell, many of the lateral vein-scales long and broad.

I originally placed this genus in the *Aedeomyiinae* but now I feel sure it comes near *Stegomyia*. No ♂'s have however yet been found.

Geographical distribution of species. — A single species only at present known.

1. *Æ. domesticus*, Theobald, Mon. Culic. Vol. 2, p. 253 (1901) (West and Central Africa).

Uranotania domestica, Theobald.

10. GENUS LEICESTERIA, THEOBALD

Leicesteria, Theobald, The Entom. p. 211 (Aug. 1904).

Characters. — Head covered with flat scales, upright forked scales and a row of spindle shaped ones around the eyes. Mesothorax with narrow and broad curved scales; scutellum and prothoracic lobes with flat scales. Palpi of the ♂'s slender, no hair-tufts, longer than proboscis; of the ♀ half the length of the proboscis, composed of 4 segments. Wing scales and venation much as in *Stegomyia*.

This genus comes near *Eretmapodites* in appearance but can at once be told by the scales around the eyes and the great length of the ♀ palpi.

Geographical distribution of species. — A single species only occurs.

1. *L. longipalpis*, Leicester, The Entom. p. 211 (Aug. 1904) (Kuala Lumpur).

11. GENUS MACLEAYA, THEOBALD

Macleaya, Theobald, The Entom. Vol. 36, p. 155 (1903).

Characters. — Head clothed with flat scales except in the middle where they are in the form of narrow-curved scales. Scutellum with flat scales to the mid lobe, narrow-curved ones to the lateral lobes.

Geographical distribution of species. — This genus is represented by one species from Australia.

1. *M. tremula*, Theobald, The Entom. Vol. 36, p. 155 (1903) (South Queensland).

12. GENUS HULECOETOMYIA, THEOBALD

Hulecoetomyia, Theobald, The Entom. p. 163 (1904).

Characters. — Head mostly covered with flat scales, but there is a pronounced median area of narrow-curved scales, which also occur along the nape and around the eyes. Scutellum with a rosette of flat and somewhat spindle shaped scales to the mid lobe and scattered ones of similar form on the lateral lobes; prothoracic lobes with small flat scales. Fork-cells of wings small. Palpi short in the ♀; in the ♂ long, but shorter than the proboscis, thin and devoid of hair-tufts; the apical joint about half the length of the penultimate.

This genus can at once be told by the cephalic characters and by the scutellar scales. The scutellar scales are apparently all rounded apically and not pointed as in true spindle-shaped scales.

Geographical distribution of species. — Two species occur in this genus, one previously included in *Stegomyia*.

1. *H. trilineata*, Leicester, The Entom. p. 163 (1904) (Kuala Lumpur).

2. *H. pseudotaeniata*, Giles, The Entom. p. 192 (1901) (Northern India).

Stegomyia pseudotaeniata, Giles.

13. GENUS PHAGOMYIA, NOV. GEN.

Characters. — Head clothed with flat scales, except for a few along the nape. Scutellum with small flat scales on the mid lobe, narrow-curved ones on the lateral lobes.

Allied to *Stegomyia* but easily separated by the narrow-curved scales on the lateral lobes of the scutellum.

Geographical distribution of species. — Two species are definitely known and possibly a third belongs here.

1. *P. gubernatoris*, Giles. The Entom. p. 194 (1901) (Northern India).

Stegomyia gubernatoris, Giles.

2. *P. irritans*, Theobald, Rep. Liverpool School Trop. Med. p. 3, app. (1901) (Bonny, West Africa).
3. *P. nigricephala*, Theobald, idem, p. 4, App. (1901) (Bonny, West Africa).

14. GENUS POLYLEPTIOMYIA, NOV. GEN.

Characters. — Head clothed with flat scales and with narrow-curved ones on the nape. Scutellum with spindle-shaped scales to the mid lobe, flat ones to the lateral lobes.

Allied to *Stegomyia* but told by the narrow-curved scales on the head and the scutellar scales.

Geographical distribution of species. — A single species only occurs in the genus.

1. *P. albocephala*, Theobald, Mon. Culic. Vol. 3, p. 140 (1903) (Gambia).

15. GENUS HOWARDINA, THEOBALD

Howardina, Theobald, Mon. Culic. Vol. 3, p. 287 (1903).

Characters. — Head clothed with flat scales and narrow-curved scales forming a small narrow-curved median area, with the base between the eyes. The scutellum with narrow-curved scales only; wings with the lateral vein-scales rather large, long and rather thin, median vein scales small. Palpi of ♀ minute, penultimate joint long, longer than the two basal ones, apical joint minute. Male palpi long and acuminate.

Resemble *Aedeomyiinae* in general appearance but the ♂'s have long palpi and thus come near *Stegomyia*.

Geographical distribution of species. — Two species occur in this genus.

1. *H. walkeri*, Theobald, Mon. Culic. Vol. 1, p. 424 (1901) (Jamaica).

Culex (Stegomyia?) walkeri, Theobald.

2. *H. greenii*, Theobald, Mon. Culic. Vol. 3, p. 289 (1903) (Ceylon).

16. GENUS DANIELSIA, THEOBALD

Danielsia, Theobald, The Entom. p. 78 (1904).

Characters. — Head covered with small flat scales, with truncated ends, loosely and rather raggedly placed on the head, a few long narrow-curved ones behind and small upright forked ones with them. Scutellum with small narrow-curved scales; mesothorax with narrow-curved scales. Palpi short in the ♀, densely scaled; in the ♂ as long as the proboscis, the two apical joints short, the apical rather shorter than the penultimate, hair-tufts scanty; fork-cells of wings rather short.

This genus comes near *MacLeaya* but can at once be told by the narrow-curved scutellar scales and from the allied *Catageiomyia* by the long ♂ palpi.

Geographical distribution of species.

1. *D. albotaniata*, Leicester, The Entom. p. 111 (1904) (Kuala Lumpur, Fed. Malay. States).

17. GENUS LEPIDOTOMYIA, NOV. GEN.

Characters. — Head with flat scales all over except around the eyes where they are almost spindle shaped and some narrow-curved ones behind, also upright forked scales. Scutellum with narrow-curved scales only. Palpi of ♀ rather long, scaly, those of the ♂ with short hair-tufts. Fork-cells short. Proboscis short, not more than half the length of the body.

Very near *Danielsia* but with narrow spindle shaped scales around the eyes and shorter proboscis, Large species.

Geographical distribution of species. — A single species only known.

1. *L. magna* (1), nov. sp. (Bombay).

18. GENUS CATAGEIOMYIA, THEOBALD

Catageiomyia, Theobald, Mem. XI, Liverp. School Trop. Med., p. 1 app. (1903).

Characters. — Head clothed with loose irregularly disposed flat scales over most of the area, with narrow-curved ones behind and some upright forked ones; in the ♂ the narrow-curved scales spread out over the head rather further than in the ♀. Scutellum with flat scales to the mid lobe, narrow-curved ones to the lateral lobes; narrow-curved scales on the mesonotum. Palpi short in the ♀, composed of 3 segments, the last as long as the two basal ones; palpi in ♂ long, but not nearly as long as the proboscis, the two apical segments short, the apical slightly shorter than the penultimate; apex of the antepenultimate slightly expanded, dense hairs on each side of the penultimate and on one side of the apex of the antepenultimate.

This genus differs from those related to it in (1) ♂ palpi shorter than the proboscis and (11) loosely applied cephalic flat scales. In general appearance the single species resembles a *Culex* of the *fatigans* group.

Geographical distribution of species. — A single species only occurs.

1. *C. senegalensis*, Theobald, Mem. XI, Liverp. Sch. Trop. Med. p. 1 app. (1903) (St Louis, Senegal).

19. GENUS GILESIA, THEOBALD

Gilesia, Theobald, Mon. Culic. Vol. 3, p. 233 (1903).

Characters. — Head covered with rather broad and flat spindle-shaped scales and narrow-curved ones; scutellum with small flat scales and some spindle shaped ones. Palpi of the ♀ of four segments, rather long, about one-fourth the length of the thick proboscis, apical joint long, penultimate joints swollen, globose, the two basal joints small. Basal joint of the antennæ with small bristles and a few small flat scales. Ungues of ♀ very thick, short and with a blunt tooth. Wing venation much as in preceding genera; fork-cells small; veins clothed with rather broad elongated scales like *Taeniorhynchus* (genus 25). Male unknown.

This genus comes between the *Stegomyia*s and *Culex*, whilst the wings give it a *Taeniorhynchus* like appearance. The chief characters are the scale ornamentation of the head and scutellum.

Geographical distribution of species. — A single species is only known at present.

1. *G. aculeata*, Theobald, Mon. Culic. Vol. 3, p. 233 (1903) (South Queensland).

(1) *Lepidotomyia magna*, nov. spec. Head black with a narrow white eye-border and a few pale median scales; palpi of ♀ rather long and black. Thorax white in front, forming a solid white W, a small white triangular spot on the base of the wings and white lateral spots. Abdomen black with basal white lateral spots. Fore legs black with a white apical tibial spot; mid legs with an apical tibial spot, metatarsi white with a black band towards the apical half, apex of first tarsal and remainder black; hind legs with base and apex of femora white, tibia black, base and apex of metatarsus with white bands, base of first tarsal with white band and a minute one to the second segment. Wings normal. — Length, 5.5 mm. Habitat Bombay.

20. GENUS THEOBALDIA NEVEU-LEMAIRE

Theobaldia, Neveu-Lemaire, C. r. Soc. Biol. Paris (29 Nov. 1902).

Characters. — Head and scutellar scales narrow-curved, except at the sides of the head where they are flat, there are also upright forked scales on the head. Palpi long in the ♂, the two apical joints swollen, composed of three segments, and three incomplete pseudo-joints, the two apical segments and apex of the antepenultimate with hair-tufts. Wings with many large lanceolate scales, which become collected into patches forming more or less distinct spots.

The members of this genus form a very natural group, easily told by the ♂ clavate palpi and the lanceolate wings scales often collected into definite spots. They were all previously placed in *Culex*.

Geographical distribution of species. — All the species belong to temperate climates, when they occur elsewhere it is usually in the hills. They are domestic forms and thus are easily distributed by artificial agencies.

1. *T. annulata*, Schrank, Beitr. Naturg. p. 97, 70 (1776) (Europe, Punjab, India, North America, Mexico).

— Plate 1, Fig. 12.

affinis, Stephens, Zool. Journ. Nr. I. (1825).

variegatus, Schrank, Enum. Ins. Austriae ind. Aug. Vind. (1781).

2. *T. penetrans*, Robineau-Desvoidy, Ess. Culic. (1827) (France).

3. *T. ficalbii*, Noé, Bull. Soc. Ent. Ital. Vol. 31, p. 231 (1890) (Italy).

4. *T. glaphyrophorus*, Schiner, Fauna Austr. Die Fliegen. Vol. 2, p. 628 (10) (1864) (Austria).

5. *T. incidens*, Thomson, Eugen. Resa. Dipt. p. 443 (California, New Mexico).

6. *T. spathipalpis*, Rondani, Dipt. Ital. Prodr. Vol. 1 (1886) (Italy and Mediterranean Islands, Gibraltar, India, Cape Colony, Khartoum, Madeira, Canary Islands, Algeria).

? *longiareolatus*, Macquart, Dipt. Exot. p. 34 (1838).

21. GENUS GRABHAMIA, THEOBALD

Grabhamia, Theobald, Mon. Culic. Vol. 3, p. 243 (1903).

Characters. — Allied to both *Culex* and *Taeniorhynchus*. Head clothed with rather broad curved scales, upright forked scales and flat lateral ones. All the thorax with narrow-curved scales. Palpi of ♀ composed of 4 segments, the apical one minute; ♂ palpi long, the two last segments swollen and with distinct hair tufts. Wings rather short; fork-cells short; median vein scales rather thick, lateral ones rather short and broadish, neither so long nor as dense as in *Taeniorhynchus*; scales of wings mottled and also the legs mottled and spotted.

Eggs laid singly (*dorsalis*, *jamaicensis*, etc.), larvae with short siphon when adult.

Geographical distribution of species. — Twelve species occur in this genus, the majority come from Europe and North America. Previously placed in the genus *Culex*.

1. *G. jamaicensis*, Theobald, Mon. Culic. Vol. 2, p. 345 (1901) (Jamaica, North America). — Plate 2, Fig. 4.

2. *G. pygmaea*, Theobald, idem, Vol. 3, p. 245 (June 1903) (Antigua, Jamaica).

? *Culex nanus*, Coquillett.

3. *G. nana*, Coquillett, Canad. Ent. p. 256 (Sept. 1903) (Florida).

Probably my *G. pygmaea*.

4. *G. discolor*, Coquillett, idem, p. 256 (1903) (New Jersey).

5. *G. sollicitans*, Walker, Ins. Saund. p. 427 (1856) (United States, Jamaica, Galapagos Islands, Tamsui, Formosa).

6. *G. durbanensis*, Theobald, Mon. Culic. Vol. 3, p. 247 (1903) (Durban).

7. *G. ambiguus*, Theobald, idem, Vol. 3, p. 248 (1903) (Quilon, South India).

8. *G. curriei*, Coquillett, Canad. Ent. p. 259 (1901) (N. Dakota, Idaho, New Mexico, California U. S. A.).

9. *G. spencerii*, Theobald, Mon. Culic. Vol. 2, p. 99 (1901) (Canada, Philippine Islands).

var. idahoensis, Theobald, Mon. Culic. p. 250 (1903).

10. *G. pulcrispalpis*, Rondani, Spec. Ital. Gen. Culex (Bull. Soc. Ent. Ital.) (1872) (Italy, England).
11. *G. pulcritarsis*, Rondani, idem (1872) (Italy).
12. *G. dorsalis*, Meigen, Syst. Besch. Zweifl. Ins. Vol. 4, p. 242, 18 et I, 2, 3 (1818) (Europe).
13. *G. penicillaris*, Rondani, Spec. Ital. Gen. Culex (Bull. Soc. Ent. Ital.) (1872) (Italy).
14. *G. vittata*, Theobald, Canad. Ent. p. 311 (1903) (New Mexico).

GENUS UNCERTAIN

Culex impudicus, Ficalbi, Bull. Soc. Ent. Ital. p. 190 (1890) (Sardinia, Sicily).

Probably comes in *Grabhamia*.

C. leucacanthus, Loew, Besch. Europ. Dipt. 3. Band, Halle (1873) (Kasan).

22. GENUS ACARTOMYIA, THEOBALD

Acartomyia, Theobald, Mon. Culic. Vol. 3, p. 251 (1903).

Characters. — Allied closely to *Grabhamia* but differs in cephalic ornamentation. Head clothed with irregularly disposed flat scales all over, with patches of narrow curved and numerous upright forked scales, giving the head a general ragged appearance. Thorax with narrow-curved scales. Palpi of ♀ composed of 4 segments, of the ♂ much swollen apically involving the last two segments and the apex of the antepenultimate segment, the apical one being especially swollen. Wings with rather small fork-cells, majority of vein scales broadish and with crenulated edges, mottled.

Larvae with short thick siphons when mature.

Geographical distribution of species. — A single species only occurs at present; the larvae living in salt pans along the shore at Malta. This mosquito may have some connection with Mediterranean fever.

1. *A. zammitii*, Theobald, Mon. Culic. Vol. 3, p. 252 (1903) (Malta).

23. GENUS LUTZIA, THEOBALD

Lutzia, Theobald, Mon. Culic. Vol. 3, p. 155 (1903).

Characters. — Head scales of all three forms, narrow-curved, upright forked and flat lateral ones; scales of thorax narrow-curved. Wings with partly *Culex*-like and partly *Taniorhynchus*-like scales, the latter forming dark areas and spots; wing fringe spotted. Palpi of ♀ composed of 3 segments; ♂ palpi of 3 segments, the last segment acuminate slightly longer than the penultimate, all the segments very hairy, except at the base of the palpi.

Geographical distribution of species. — A single species only is known in the genus coming from South America. It can easily be told by its large size and spotted wings.

1. *L. bigotii*, Bellardi, Mem. Accad. Sc. Torino, Vol. 22, p. 200 (2) (Brazil, Mexico).— Plate 2, Fig. 1.

24. GENUS CULEX, LINNÆUS

Culex, Linnaeus, Syst. Nat. (1735).

Characters. — Head clothed with narrow-curved and upright forked scales and with flat scales at the sides. Thorax with narrow-curved and curved hair-like scales on both mesonotum and scutellum. Abdomen with flat scales all over. Legs simple and scaled. Ungues of ♀ equal, simple or serrated; of ♂ in fore and mid legs unequal, simple or serrated. Wings with the fork-cell long or moderately long, the lateral vein scales linear or slightly lanceolate. Palpi of ♂ acuminate.

This genus, the type of the family still contains a number of species that may possibly be justifiably excluded from it.

Geographical distribution of species. — The members of this genus are found in almost all parts of the world. By far the largest number of species undoubtedly occur in this genus. One species only has spotted wings.

1. *C. mimeticus*, Noé, Bull. Soc. Ent. Ital. Vol. 31, p. 240 (1899) (Italy, Mediterranean Islands, India, Fed. Malay States).
? *hyrcanus*, Pallas, Reisen Russ. Reich. (1871) (Near Caspian Sea).
2. *C. tæniorhynchus*, Wiedemann, Dipt. Exot. p. 43 (1821) (South America, Southern United States, West Indies).
3. *C. microannulatus*, Theobald, Mon. Culic. Vol. 1, p. 353 (1901) (Central and Southern India, Philippine Islands, Federated Malay States).
4. *C. japonicus*, Theobald, idem, Vol. 1, p. 385 (1901) (Japan, Ceylon).
5. *C. mariae*, Sergeant, Ann. Inst. Pasteur, Vol. 17, p. 62 (1903) (Algeria).
6. *C. vishnui*, Theobald, Mon. Culic. Vol. 1, p. 355 (1901) (Ceylon, Central Provinces and S. India).
7. *C. annulus*, Theobald, idem, Vol. 1, p. 358 (1901) (Hongkong, Lamma, Straits Settlements).
8. *C. sitiens*, Wiedemann, Ausseurop. Zweifl. Ins. p. 544 (1828) (Fed. Malay States, South India, Philippine Islands).
9. *C. impellens*, Walker, Proc. Linn. Soc. Lond. Vol. 4, p. 91 (N. W. Provinces, India, Federated Malay States).
10. *C. annuliferus*, Ludlow, Journ. Ent. Soc. New York, Vol. 2 p. 141 (1903) (Philippine Islands).
11. *C. annulirostris*, Skuse, Proc. Linn. Soc. N. S. Wales, p. 1737 (1889) (Queensland, New South Wales).
subspec. : *bancroftii*, Theobald, Mon. Culic. Vol. 1, p. 367 (1901) (Bupengary, S. Queensland).
12. *C. infula*, Theobald, Mon. Culic. Vol. 1, p. 370 (1901) (Straits Settlements).
13. *C. longirostris*, Van der Wulp, Bijd. Sum. Exp. Dipt. Vol. 4, p. 9 (Sumatra).
14. *C. annulioris*, Theobald, Mon. Culic. Vol. 1, p. 371 (1901) (Mashonaland, Philippines Islands).
var. *gambiensis*, Theobald, Mem. X. Liverp. School Trop. Med. App. p. 5 (1903).
15. *C. plumosus*, Theobald, Mon. Culic. Vol. 1, p. 373 (1901) (Mashonaland).
? ♂ of *C. annulioris*.
16. *C. dissimilis*, Theobald, idem, Vol. 1, p. 376 (1901) (Sierra Leone).
17. *C. hirsutipalpis*, Theobald, ibidem, Vol. 1, p. 378 (1901) (Mashonaland).
18. *C. albirostris*, Macquart, Dipt. Exot. Vol. 4, p. 10 (1821) (Port Darwin, S. Australia, N. Zealand).
19. *C. kelloggii*, Theobald, Canad. Ent. Vol. 35, p. 211 (1903) (California, U. S. A. New Mexico).
20. *C. nocturnus*, Theobald, Mon. Culic. Vol. 3, p. 159 (1903) (Fiji).
21. *C. gnophodus*, Theobald, idem, Vol. 3, p. 163 (1903) (Straits Settlements).
22. *C. transvaalensis*, Theobald, ibidem, Vol. 3, p. 165 (1903) (Pretoria).
23. *C. alis*, Theobald, ibidem, Vol. 3, p. 167 (1903) (Christmas Islands).
24. *C. thalassius*, Theobald, ibidem, Vol. 3, p. 168 (1903) (Gambia).
25. *C. anarmostus*, Theobald, ibidem, Vol. 3, p. 170 (1903) (West Africa).
26. *C. duttoni*, Theobald, Rep. School. Liverp. Trop. Med. App. p. 5 (1901) (West Africa).
27. *C. apicalis*, Theobald, Mon. Culic. Vol. 3, p. 171 (1903) (Brazil).
28. *C. corniger*, Theobald, idem, Vol. 3, p. 173 (1903) (Brazil).
29. *C. alboannulatus*, Macquart, Dipt. Exot. p. 10, Suppl. 4 (South Queensland, N. S. Wales, Eastern Coast of Australia).
30. *C. hirsutum*, Theobald, Mon. Culic. Vol. 1, p. 392 (1901) (Mashonaland, Philippine Islands).
31. *C. vigilax*, Skuse, Proc. Linn. Soc. N. S. Wales, p. 1731 (1889) (Queensland).
marinus, Theobald, Mon. Culic. Vol. 1, p. 396 (1901).
32. *C. imitator*, Theobald, Mon. Culic. Vol. 3, p. 175 (1903) (Brazil).
33. *C. pleurisriatus*, Theobald (Lutz Mss.), idem, Vol. 3, p. 177 (1901) (Brazil).
34. *C. cautans*, Meigen, Syst. Besch. Zweifl. Ins. Vol. 1, 6 (1818) (Europe, N. America, India).
conterrens, Walker, Ins. Saund. p. 427 (1856) (N. America, India).
stimulans, Walker, Cat. Dipt. Brit. Mus. p. 4 (1848).
maculatus, Meigen, Syst. Besch. Zweifl. Ins. Vol. 1, 6, 7 (1818).
fumipennis, Stephens, Zool. Journ. Vol. 1, p. 453.5 (1825).
35. *C. annulipes*, Meigen, Syst. Besch. Zweifl. Ins. Vol. 6, p. pp. 241, 15 (1830) (Europe).

36. *C. vexans*, Meigen, Syst. Besch. zweifl. Ins. Vol. 6, pp. 241.16 (1830) (Europe).
malariae, Grassi, Vent. Spec. Zanz. Ital. p. 175 (1899).
articulatus, Rondani, Spec. Ital. Gen. Culic. Bull. Soc. Ent. Ital. (1872).
37. *C. particeps*, Adams, Kansas Univ. Science Bull. Vol. 2 (2), p. 26 (1903) (Arizona).
38. *C. vittiger*, Skuse, Proc. Linn. Soc. N. S. Wales, p. 1728 (1889) (S. Queensland, N. S. Wales).
39. *C. sylvestris*, Theobald, Mon. Culic. Vol. 1, p. 406 (1901) (Canada, U. S. America).
40. *C. cantator*, Coquillett, Canad. Ent. p. 255 (1903) (New Jersey).
41. *C. testaceus*, Van der Wulp, Tijdschr. V. Ent. p. 128 (1869) (Canada).
42. *C. flavescens*, Theobald, Mon. Culic. Vol. 1, p. 410 (1901).
43. *C. vagans*, Wiedemann, Ausseurop. Zweifl. Ins. p. 545 (1828) (China).
44. *C. caecus*, Theobald, Mon. Culic. Vol. 1, p. 413 (1901) (Fed. Malay States, Philippine Islands).
45. *C. procax*, Skuse, Proc. Linn. Soc. N. S. Wales, p. 1742 (1889) (Queensland, N. S. Wales).
46. *C. rubithorax*, Macquart, Dipt. Exot. Suppl. 4, p. 9 (1850) (South Queensland, Tasmania).
47. *C. occidentalis*, Skuse, Proc. Linn. Soc. N. S. Wales p. 1729 (1885) (Victoria, Western Australia).
var. A. Theobald, Mon. Culic. Vol. 1, p. 421 (1901) (Victoria).
48. *C. flavifrons*, Skuse, Proc. Linn. Soc. N. S. Wales, Vol. 3, p. 1735 (1889) (New South Wales).
49. *C. maculiventris*, Macquart, Dipt. Exot. Vol. 1, p. 7 (1821) (Algeria).
50. *C. imprimiens*, Walker, Proc. Linn. Soc. Lond. Vol. 5, p. 144 (Amboina).
51. *C. terreus*, Walker, Ins. Saund. p. 429 (1856) (South America).
52. *C. janitor*, Theobald, Mon. Culic. Vol. 3, p. 183 (1903) (Jamaica).
53. *C. tortilis*, Theobald, The Entom. p. 281 (1903) (Jamaica).
54. *C. camptorhynchus*, Thomson, Eug. Resa. Dipt. p. 443 (1868) (Sydney, Australia).
55. *C. canadensis*, Theobald, Mon. Culic. Vol. 2, p. 3 (1903) (Ontario, Canada).
56. *C. atropalpus*, Coquillett, Canad. Ent. Vol. 34, p. 292 (North America).
57. *C. cingulatus*, Fabricius, Syst. Antl. p. 36 (1805) (Brazil).
58. *C. secutor*, Theobald, Mon. Culic. Vol. 2, p. 321 (1901) (Jamaica).
59. *C. theileri*, Theobald, idem, Vol. 3, p. 187 (1903) (Pretoria).
60. *C. creticus*, Theobald, idem, Vol. 3, p. 189 (1903) (Crete).
61. *C. morsitans*, Theobald, ibidem, Vol. 2, p. 8 (1903) (England).
62. *C. gelidus*, Theobald, ibidem, Vol. 2, p. 20 (1903) (South India, Central India; Ceylon, Fed. Malay States, Philippine Islands).
var. cuneatus, Theobald, Mon. Culic. Vol. 2, p. 22 (1903) (South India, Fed. Malay States, Philippine Islands).
var. sinensis, Theobald, idem, Vol. 3, p. 180 (1903) (China).
63. *C. quasigelidus*, Theobald, Mon. Culic. Vol. 3, p. 181 (1903) (Uganda).
64. *C. tarsalis*, Coquillett, Canad. Ent. Vol. 28, p. 43 (1896) (California).
affinis, Adams, Kansas. Univ. Bull. p. 25 (1903).
willistoni, Giles, Handb. Gnats, p. 281 (1900).
65. *C. albitarsis*, Theobald, Mon. Culic. Vol. 2, p. 25 (1901) (West Africa, Guiana?).
66. *C. longipalpis*, Van der Wulp, Bijdr. Midd. Sumatr. Exped. Vol. 4, p. 9 (Alah, Pandjang and Soerelangoen).
67. *C. univittatus*, Theobald, Mon. Culic. Vol. 2, p. 29 (1901) (Natal, Mashonaland, Singapore).
68. *C. quasiunivittatus*, Theobald, idem, Vol. 2, p. 32 (1901) (Mashonaland).
69. *C. albolineatus*, Giles, Handb. Gnats (2), p. 430 (1902) (N. W. Provinces, India).
70. *C. albifasciatus*, Macquart, Dipt. Exot. Vol. 1, 354 (1838) (Brazil, Argentine).
vittatus, Philippi, Verh. Zool. Bot. Ges. Wien. Vol. 15, p. 596 (1865).
Ochlerotatus albifasciatus, Arribalzaga.
71. *C. confirmatus*, Theobald, Mon. Culic. p. 42 (1901) (Jamaica, Argentine, Brazil, British Guiana).
72. *C. serratus*, Theobald, idem, Vol. 2, p. 45 (1901) (Brazil, British Guiana, Trinidad).
73. *C. dupreei*, Coquillett, Canad. Ent. p. 10 (1903) (N. America).
74. *C. fuscus*, Zetterstedt, Dipt. Scand. Vol. 9 (1850) (Scandinavia).
75. *C. iracundus*, Walker, List. Dipt. Brit. Mus. p. 6 (1848) (New Zealand).
76. *C. pulcriventer*, Giles, The Entom. p. 194 (1901) (Northern India).
77. *C. triseriatus*, Say, Journ. Acad. Nat. Sc. Philad. Vol. 3, p. 12 (North America).
78. *C. aurifer*, Coquillett, Canad. Ent. p. 255 (1903) (New Hampshire).
79. *C. lateralis*, Meigen, Syst. Besch. Europ. zweifl. Ins. 1 (5) (1815) (Europe, Algeria).

80. *C. dyari*, Coquillett, Journ. New-York. Ent. Soc. Vol. 10, p. 192 (North America).
 81. *C. trivittatus*, Coquillett, idem (North America).
 82. *C. uncus*, Theobald, Mon. Culic. Vol. 2, p. 53 (1901) (Selangor).
 83. *C. subalbatus*, Coquillett Proc. U. S. Nat. Mus. Vol. 21, p. 302 (1899) (Japan).
 84. *C. atripes*, Skuse Proc. Linn. Soc. N. S. Wales, p. 1750 (1899) (New South Wales).
 85. *C. cinereus*, Theobald, Mon. Culic. Vol. 2, p. 58 (1901) (West and Central Africa).
 86. *C. nigrochaetae*, Theobald, idem, Vol. 2, p. 60 (1901) (Lagos).
 87. *C. pseudocinereus*, Theobald, ibidem, Vol. 2, p. 62 (1901) (Mashonaland).
 88. *C. metallicus*, Theobald, ibidem, Vol. 2, p. 63 (1901) (West and Central Africa).
 89. *C. mathisi*, Neveu-Lemaire, Arch. de Parasit. Vol. 6 (1), p. 5 (1902) (Cayenne).
 90. *C. frenchii*, Theobald, Mon. Culic. Vol. 2, p. 66 (1901) (Victoria).
 91. *C. longipes*, Theobald, idem, Vol. 2, p. 68 (1901) (Singapore).
 92. *C. freetownensis*, Theobald, ibidem, Vol. 2, p. 69 (1901) (Sierra Leone).
 93. *C. luteolateralis* Theobald, ibidem, Vol. 2, p. 71 (1901) (Natal, West and Central Africa. Fed. Malay States).
 var. pallida, Theobald, Mem. 11, p. 2 App. Liverp. Sch. Trop. Med. (1903).
 var. albothorax, Theobald, idem (Senegambia).
 94. *C. diversus*, Theobald, Mon. Culic. Vol. 2, p. 73 (1901) (England).
 95. *C. punctator*, Kirby, Fauna Bor. Amer. p. 309 (Hudson's Bay, North America).
 96. *C. ornatus* Hoffmannseg (Meigen), Syst. Besch. Eur. zweifl. Ins. Vol. 1 (5, 4) (1818) (Europe).
 equinus, Meigen, Syst. Besch. Eur. Zweifl. Ins. Vol. 1, p. 71 (1818).
 non ornatus, Ficalbi.
 97. *C. consobrinus*, Robineau-Desvoidy, Ess. Culic. (1838) (North America).
 impatiens, Walker, List Dipt. Brit. Mus. p. 5 (1848).
 pinguis, Walker, Science Gossip, pp. 79-81 (1867).
 inornatus, Williston, North Amer. Fauna Washingt. (1893).
 98. *C. nemorosus*, Meigen, Syst. Besch. Eur. zweifl. Ins. Vol. 1, p. 4, (1818) (Europe and N. America).
 sylvaticus, Meigen, Syst. Besch. 6. Theil (1830).
 guttatus, Curtis, Guide Ar. Brit. Ins. Vol. 1 (1829).
 provocans, Walker, List Dipt. Brit. Mus. p. 7 (1848).
 salinus, Ficalbi, Not. Zanz. Ital. Vol. 9, a, nota (1896).
 reptans, Meigen, Klass. Vol. 1, p. 3, 2.
 fasciatus, Meigen, idem, p. 4-5.
 var. 1. salinus, Ficalbi.
 var. 2. luteovittata, Theobald, Mon. Culic. Vol. 1, p. 85 (1902).
 var. 3. detritus, Haliday, Ent. Mag. Vol. 1 (1833).
 99. *C. sagax*, Skuse, Proc. Linn. Soc. N. S. Wales p. 1744 (1896) (New South Wales, South Queensland).
 100. *C. pervigilans*, Bergroth, Wien. Ent. Zeit. p. 295 (1889) (New Zealand, New South Wales and Queensland).
 101. *C. australis*, Erichson, Arch. Naturg. Vol. 8, p. 470 (1842) (Tasmania, Victoria).
 crucians, Walker, Ins. Saund. Vol. 1, p. 432 (1856).
 102. *C. nigripes*, Zetterstedt, Ins. Lapp. (1838-40) (Northern Europe, Northern India, North America).
 impiger, Walker, List Dipt. Brit. Mus. p. 7 (1848).
 implacabilis, Walker, idem, p. 7 (1848).
 103. *C. terriei*, Theobald, Mon. Culic. Vol. 3, p. 193 (1903) (Britain).
 104. *C. sylvae*, Theobald, idem, Vol. 2, p. 96 (1901); Vol. 3, p. 194 (1903) (Britain).
 105. *C. hirsuteron*, Theobald, ibidem, Vol. 1, p. 98 (1901) (Virginia, U. S. A.).
 106. *C. ochraceus*, Theobald, ibidem, Vol. 1, p. 103 (1901) (Mashonaland).
 107. *C. trilineatus*, Theobald, ibidem, Vol. 1, p. 105 (1901) (Upper Burma).
 108. *C. territans*, Walker, Ins. Saund. p. 428 (1856) (United States).
 ? *geniculatus*, Olivier.
 109. *C. salisburyensis*, Theobald, Mon. Culic. Vol. 2, p. 112 (1901) (Mashonaland, Pretoria).
 110. *C. mediolineatus*, Theobald, idem, Vol. 2, p. 113 (1901) (Upper Burma).
 111. *C. infictus*, Theobald, ibidem, Vol. 2, p. 115 (1901) (Grenada).
 112. *C. rusticus*, Rossi, Ins. Etrus. Vol. 2. Libar. (1790) (Tuscany).
 punctatus, Meigen, Syst. Besch. Eur. zweifl. Ins. Vol. 1 (1818).
 quadratimaculatus, Macquart (Rev. Syst. Culic. Eur. p. 107, Ficalbi) (1834).

113. *C. geniculatus*, Olivier, Enc. Méth. Hist. Nat. Ins. Vol. 16 (1791) (Paris, Italy, Palestine).
hortensis, Ficalbi, Bull. Soc. Ent. Ital. p. 292 (1899).
114. *C. sergentii*, Theobald, Ann. Inst. Pasteur, Vol. 17, p. 2 (June 1903); Mon. Culic. Vol. 3, p. 218 (1903) (Algeria).
115. *C. apicalis*, Adams, Kansas Univ. Sc. Bull. Vol. 2, n° 2, p. 26 (1903) (Arizona).
116. *C. scholasticus*, Theobald, Mon. Culic. Vol. 2, p. 120 (1901) (West Indies, British Guiana).
117. *C. modestus*, Ficalbi, Bull. Soc. Ent. Ital. Vol. 21 (1889) (Italy).
118. *C. similis*, Theobald, Mon. Culic. Vol. 3, p. 207 (1903) (Jamaica).
119. *C. virgultus*, Theobald, idem, Vol. 2, p. 123 (1901) (Brazil).
120. *C. masculus*, Theobald, ibidem, Vol. 2, p. 125 (1901) (Sierra-Leone).
121. *C. virideventer*, Giles, Journ. Bomb. Nat. Hist. Soc. Vol. 13, p. 609, n° 4 (1901) (Naini Tal, India).
122. *C. angulatus*, Theobald, Mon. Culic. Vol. 2, p. 324 (1901) (Naini Tal, India).
123. *C. tipuliformis*, Theobald, idem, Vol. 2, p. 327 (1901) (N. W. Provinces, India).
124. *C. pipiens*, Linnæus, Ins. Suec. 1890 (1758) (Europe, Mediterranean Islands, United States and Canada, Egypt., Madeira, Teneriffe, Algeria).
vulgaris, Linnæus.
albimus, Linnæus.
agilis, Bigot, Bull. Soc. Ent. Fr. Vol. 9, p. 122. (1884 ?)
ciliaris, Linnæus, Syst. Nat. Vol. 12, p. 1002. 2 (1767).
communis, De Geer, Ins. Vol. 6, p. 316 (1777).
rufus, Meigen, Syst. Besch. Vol. 1, p. 7 (1818).
phytophagus, Ficalbi, Rev. Sist. Culic. Eur. p. 276 (1889).
domesticus, Germar, Reise Dalm. (1817).
125. *C. quasipipiens*, Theobald, Mon. Culic. Vol. 2, p. 136 (1901) (Central Provinces, India).
126. *C. varioannulatus*, Theobald, idem, Vol. 3, p. 198 (1903) (Azores).
127. *C. fouchowensis*, Theobald, ibidem, Vol. 2, p. 137 (1901) (Fou Chow, China).
128. *C. perexiguus*, Theobald, ibidem, Vol. 3, p. 199 (1903) (Palestine).
129. *C. salinarius*, Coquillett. I have no reference to the description if it is distinct (vide. Ent. News, p. 73, Feb. 1904).
130. *C. nigrutilus*, Zetterstedt, Dipt. Scand. Vol. 9 (1850) (Scandinavia, Crete, Britain).
131. *C. palus*, Theobald, Mon. Culic. Vol. 3, p. 194 (1903) (St. Vincent, Barbados).
132. *C. vestians*, Theobald, idem, Vol. 2, p. 142 (1901) (Toronto).
133. *C. bilineatus*, Theobald, ibidem, Vol. 3, p. 196 (1903) (Brazil).
134. *C. zombaensis*, Theobald, ibidem, Vol. 2, p. 143 (1901) (Zomba, British Central Africa).
135. *C. reesii*, Theobald, ibidem, Vol. 2, p. 145 (1901) (Hong Kong).
136. *C. sericeus*, Theobald, ibidem, Vol. 2, p. 147 (1901) (Hong Kong).
137. *C. cylindricus*, Theobald, ibidem, Vol. 3, p. 202 (1903) (South Queensland).
138. *C. flavipes*, Macquart, Dipt. Exot. Vol. 1, p. 355 (1838) (British Guiana, Brazil, Argentina, Chile, Uruguay, Trinidad).
serotinus, Philippi, Auf. Chil. Dipt. Vol. 1, p. 1 (1865).
139. *C. invidiosus*, Theobald, Rept. Liverp. School. Trop. Med. Mem. 4. App. p. 11 (1901) (Bonny).
140. *C. invenustus*, Theobald, idem, App. p. 9 (Degama, West Africa).
141. *C. nebulosus*, Theobald, ibidem, App. p. 10 (1901) (Old Calabar, West Africa).
142. *C. puinosus*, Theobald, ibidem, App. p. 8 (1901) (West Africa).
pruina, Theobald, ibidem.
143. *C. fatigans* (1), Wiedemann, Aussereurop. zweifl. Eur. Ins. p. 10 (1828) (Asia, S. Centr. and N. America, West Indies, Africa, Southern Europe, Australia and most Oceanic Islands). — **Plate 2, Fig. 2.**
anxifer, Coquerel (Bigot), Ann. Soc. Ent. Fr. (1858).
aestivans, Wiedemann, Aussereurop. zweifl. Ins. (1828).
pallipes, Meigen, Syst. Besch. Supp. (1838).
dolosa, Arribalzaga, Dipt. Argent. p. 56 (1896).
skusii, Giles, Handb. Gnats. p. 292 (1900).
? *macleani*, Skuse, Proc. Linn. Soc. N. S. Wales p. 1745 (1896).
? *pungens*, Wiedemann, Auss. zweifl. Ins. p. 9 (1828).

(1) If *pungens* is the same as *fatigans* that name must stand as it appears on the page before *fatigans*.

subspec. luteoannulatus, Theobald, Mon. Culic. Vol. 2, p. 159 (1901).

subspec. macleayi, Skuse, Proc. Linn. Soc. N. S. Wales, p. 1745 (1896).

subspec. skusii, Giles Handb. Gnats, p. 292 (1900).

subspec. trilineatus, Theobald, Mon. Culic. Vol. 2, p. 159 (1901).

144. *C. linealis*, Skuse, Proc. Linn. Soc. N. S. Wales, p. 1747 (1896) (New South Wales).
145. *C. pusillus*, Macquart, Dipt. Exot. p. 9, 4, Supp. (1838) (Egypt).
146. *C. fuscus*, Wiedemann, Dipt. Exot. p. 9 (1821) (East India, Malacca, Singapore, Sarawak).
147. *C. bicolor*, Meigen, Syst. Berschr. Zweifl. Ins. Vol. 1 (1818) (Europe).
? *marginalis*, Stephens.
148. *C. lutescens* Fabricius, Syst. Ent. Flensb. et Lips. (1775) (Europe).
 flavescens, Fabricius, Syst. Antl. (1805).
 thoracicus, Robineau-Desvoidy, Ess. Culic. (1827).
149. *C. pallens*, Coquillett, Proc. U. S. Nat. Mus. Vol. 21, p. 303 (1899) (Japan).
150. *C. decens*, Theobald, Rep. Liverp. School Trop. Med. Mem. IV, p. 7 App. (1901) (Bonny).
151. *C. nubilus*, Theobald, Mon. Culic. Vol. 3, p. 208 (1903) (British Guiana).
152. *C. crinitus*, Theobald, idem, p. 209 (1903) (Brazil).
153. *C. azoriensis*, Theobald, ibidem, p. 210 (1903) (Azores).
154. *C. viridis*, Theobald, ibidem, p. 212 (1903) (Uganda, Gambia, Abyssinia, Sudan).
155. *C. fragilis*, Ludlow, Journ. New York Ent. Soc. Vol. 11, p. 141 (1903) (Philippine Islands).
156. *C. ocellatus*, Theobald, Mon. Culic. Vol. 3, p. 222 (1903) (Brazil).
157. *C. halifaxii*, Theobald, idem, p. 231 (1903) (Straits Settlements).
158. *C. euclastus*, Theobald, Mem. Liverp. School. Trop. Med. Mem. X, App. p. 8 (1903) (Gambia).
159. *C. excrucians*, Walker, Ins. Saund. p. 429 (1856) (Nova Scotia).

GENUS UNCERTAIN

160. *C. concolor*, Robineau-Desvoidy, Essai Culic. Vol. 4, p. 405 (1825).
161. *C. cumminsii*, Theobald, Mon. Culic. Vol. 3, p. 214 (1903) (Uganda, Central Africa).
162. *C. melanurus*, Coquillett, Journ. N. York. Ent. Soc. Vol. 10, p. 193 (1901) (North America).
163. *C. squamiger*, Coquillett, Proc. U. S. Mus. Vol. 25, p. 85 (North America).
164. *C. tigrisipes*, Grandpré, Les Moustiques (Planters. Gaz. Press.) (1900) (Mauritius, West Africa; British Central Africa, Mashonaland, Natal, Mombasa, Queensland, Uganda, Transvaal, Straits Settlements) (1).
- maculicrura*, Theobald, Mon. Culic. Vol. 2, p. 34 (1901).
- var. A. mombasaensis*, Theobald, idem, p. 36 (1901) (Mombasa).
- var. B. sierra-leonis*, Theobald, ibidem, p. 36 (1901) (Sierra Leone).
165. *C. varipalpus*, Coquillett, Canad. Ent. Vol. 34, p. 292 (North America).
166. *C. quadrivittata*, Coquillett, idem, Vol. 34, p. 293 (Guatemala).
167. *C. cyanescens*, Coquillett, ibidem, p. 137 (Texas).
168. *C. bimaculatus*, Coquillett, Proc. U. S. Mus. Vol. 25, p. 84 (North America).
169. *C. fletcheri*, Coquillett, idem, Vol. 25, p. 84 (North America).
170. *C. kermorganti*, Laveran, C. r. Soc. Biol. Vol. 53, p. 569 (1901) (New Caledonia).
171. *C. siphonalis*, Grossbeck, Canad. Ent. Vol. 36, p. 332 (1904) (New Jersey).

THE FOLLOWING NEW SPECIES HAVE ALSO RECENTLY BEEN DESCRIBED

172. *C. cinereoborealis*, Felt & Young, Science(n.s.) Vol. 30, n° 505, p. 312 (1904) (North America) (A true *Culex* near *C. impiger*).
173. *C. lazarensis*, Felt & Young, idem (1904) (North America) (near *C. impiger*).
174. *C. abserratus*, Felt & Young, ibidem, p. 313 (1904) (North America).
175. *C. fitchii*, Felt & Young, ibidem, p. 313 (1904) (North America) (near *squamiger*, Coquillett).

1, This is probably only a spotted variety of *Culex concolor*.

SPECIES UNIDENTIFIABLE EXCEPT FROM THE TYPES (1)

The following species are described so briefly that they cannot possibly be identified except by means of the types which I have been unable to trace.

- C. luridus*, Doleschall, Natur. Tijdschr. v. Ned. Ind. Vol. 14, p. 384 (? = *inflictus*, Theobald) (Middle Java.)
C. rufinus, Bigot, Expéd. Sc. Tunisie, Dipt. p. 7 (Tunis).
C. molestus, Wiedemann, zweifl. Ins. p. 544 (? = *filipes*, Walker) (Sumatra).
C. ochripes, Macquart, Dipt. Exot. Suppl. Vol. 4, p. 11 (South America),
C. siculus, Robineau-Desvoidy, Essai Tribu Culicid. (1827) (Sicily).
C. setulosus, Doleschall, Natur. Tijdschr. v. Ned. Ind. Vol. 14, p. 384 (Middle Java).
C. calcitrans, Robineau-Desvoidy, Essai Culic. Vol. 4, p. 40 (= *pipiens*?) (1827).
C. rubidus, Robineau-Desvoidy, idem, p. 404 (1827) (Carolina).
C. meridionalis, Leach, Zool. Journ. n° 7 Oct. (1825) (Nice).
C. pallipes, Macquart, Dipt. Exot. p. 33 (1838) (Egypt).
 melanorhinus, Giles, Handb. Gnats. p. 342 (1901).
C. filipes, Walker, Proc. Linn. Soc. Lond. Vol. 5, p. 229 (Dorey, New Guinea).
C. pinguis, Walker, Science Gossip. p. 79 (1867) (British Columbia).
C. tibialis, Robineau-Desvoidy, Essai Culic. p. 404 (1827) (Brazil).
C. parvus, Macquart, Nouv. Suit. Buffon, Hist. Nat. Ins. Dipt. Vol. 1 (1834) (Bordeaux).
C. nicaensis, Leach, Zool. Journ. n° 7 Oct. (1825) (Nice).
C. fuscatus, Wiedemann, Dipt. Exot. 4th Suppl. p. 9 (1838).
C. thoracicus, Robineau-Desvoidy, Essai Culic. Vol. 3 (1827) (Paris).
C. ochripes, Macquart, Dipt. Exot. Suppl. 4, p. 4 (1838) (South America).
C. doleschallii, Giles, Handb. Gnats. (ed. 1), p. 338 (Java).
 cingulatus, Doleschall, Natur. Tijdschr. v. Ned. Ind. Vol. 10, p. 405.
C. musicus, Leach, Zool. Journ. n° 7 Oct. (1825) (Nice).
C. bipunctatus, Robineau-Desvoidy, Essai Culic. Vol. 3 (1827) (France).
C. flavirostris, Meigen, Syst. Besch. 7. Theil (1830) (Europe).
C. concinnus, Stephens, Syst. Cat. Brit. Ins. (1829).
C. unistriatus, Curtis, Guide to an Arrang. Brit. Ins. Vol. 2, Ed. (1837).
C. pallipes, Meigen, Syst. Besch. 7. Theil (1838).
C. fuscus, Zetterstedt, Dipt. Scand. (1850) (Scandinavia).

25. GENUS TAENIORHYNCHUS, ARRIBALZAGA (MODIFIED BY THEOBALD)

Taeniorhynchus. Arribalzaga, Dipt. Argent. p. 47 (1899), modified by Theobald, Mon. Culic. Vol. 2, p. 190 (1901).

Characters. — Head clothed with narrow-curved, upright forked and flat lateral scales. Thorax with narrow-curved scales. Abdomen with flat scales. Palpi long in the ♂, short in the ♀, the fifth segment in the ♀ minute, buried in the preceeding, the ♂ palpi longer than the proboscis. Wings with similar venation to *Culex* but clothed with thick elongated scales ending either diagonally, convexly or acutely; median linear scales often absent. Legs usually spotted and proboscis banded. This genus is separated from *Culex* as account of the wing scales. Probably the group of yellow species centered around *T. fulvus*. Wiedemann, will have to be excluded and placed in a new genus.

Geographical distribution of species. — The genus is represented in Europe, Asia, Africa, America and New-Zealand but so far no species have been found in Australia or any of the Oceanic Islands.

1. *T. fasciolatus*, Arribalzaga, Rev. Mus. La Plata, p. 50 (Brazil, Argentine, British Guiana, Trinidad).
 — Plafe 2, Fig. 5.

(1) These and a few others I propose to abolish as the descriptions are not sufficient to identify the species and I cannot trace the types.

2. *T. richardii*, Ficalbi, Bull. Soc. Ent. Ital. p. 261 (1896) (Italy, Britain, Canada).
3. *T. tenax*, Theobald, Mon. Culic. Vol. 2, p. 198 (1901) (Straits Settlements, West Africa, Natal, China).
4. *T. ager*, Giles, The Entomologist, p. 196 (1901) (Ceylon, Madras, N.W. Provinces of India).
5. *T. perturbans*, Walker, Ins. Saund. p. 428, pt. 1 (1856) (United States).
6. *T. arribalzagae*, Theobald, Mon. Culic. Vol. 3, p. 261 (1903) (Para, Brazil).
7. *T. confinnis*, Arribalzaga, Dipt. Argent. p. 49 (1891) (British Guiana, Argentine, Brazil, Trinidad).
8. *T. conofas*, Frauenfeld, Verh. Zool. Bot. Ges. Wien, Vol. 17, p. 451 (1867) (Federated Malay States, Formosa) (1).
Culex conofas, Frauenfeld.
9. *T. annettii*, Theobald, Mon. Culic. Vol. 2, p. 205 (1901) (West Africa).
10. *T. fulvus*, Wiedemann, Ausseurop. zweifl. Ins. p. 546 (1828) (Brazil, British Guiana).
flavicosta, Walker, Ins. Saund. p. 431 (1856).
11. *T. aurites*, Theobald, Mon. Culic. Vol. 2, p. 209 (1901) (West Africa, Federated Malay States).
12. *T. acer*, Walker, Cat. Dipt. Brit. Mus. p. 7 (1848) (New Zealand, Queensland).
13. *T. brevicellulus*, Theobald, Mon. Culic. Vol. 2, p. 22 (1901) (Burma, Hosiarpur India, Federated Malay States).
14. *T. ochraceus*, Theobald, idem, Vol. 3, p. 263 (1903) (Kuala Lumpur, Federated Malay States).
15. *T. fuscopannatus*, Theobald, idem, Vol. 3, p. 265 (1901) (Central Africa, Sudan).

26. GENUS MANSONIA, BLANCHARD

Mansonia, Blanchard, C. r. Soc. Biol. Paris n° 37. Vol. 53, p. 1046 (1901).

Panoplites, Theobald, Mon. Culic. Vol. 2, p. 173 (1901).

Characters. — Head clothed with narrow-curved and long upright forked scales. Thorax with thin hair-like curved scales and numerous bristles. Abdomen with flat scales with very convex apices; often rather ragged; in the ♀ the apex truncated and the penultimate segment usually has a row of short thick spines. Legs mottled and banded with white. Palpi of ♂ long, of four segments and with hair tufts; in the ♀ short, the first segment small, the apical one nipple-like. *Wings densely clothed with very broad asymmetrical flat scales on each side of the veins.*

This genus is very distinct owing to the curiously formed scales on the wings. The only other genus with which the ♀'s might be confused is *Aedeomyia*, the scales however are broader than in that genus.

The name I described the genus under (*Panoplites*) was previously used, the genus being renamed by Prof. R. Blanchard. Species of this genus occur in Asia, Africa, North and South America and in Australia.

Geographical distribution of species. — The chief home of this group seems to be Africa and South America.

1. *M. titillans*, Walker, List Dipt. Brit. Mus. p. 3 (1848) (South America, South of North America, West Indies).
Taeniorhynchus taeniorhynchus, Arribalzaga, Dipt. Argent. p. 48 (1896).
2. *M. pseudotitillans*, Theobald, Mon. Culic. Vol. 2, p. 178 (1901) (Lower Amazons).
3. *M. uniformis*, Theobald, idem, Vol. 2, p. 180 (1901) (India, Ceylon, Fed. Malay States, Central and Western Africa, Philippine Islands).
africanus, Theobald, Mon. Culic. Vol. 2, p. 187 (1901). — **Plate 2, Fig. 6.**
australensis, Giles, Handb. Gnats, (2^e ed.), p. 355 (1903).
var. reversus, Theobald, Mon. Culic. Vol. 2, p. 189 (1901).
4. *M. amazonensis*, Theobald, Mon. Culic. Vol. 2, p. 182 (1901) (Lower Amazon).

(1) Nos. 8 to 15 will probably have to be excluded and placed in a new genus. They are all rather large yellow, orange, or yellow and brown and purple species.

5. *M. annulifera*, Theobald, Mon. Culic. Vol. 2, p. 183 (1901) (India, Ceylon, Fed. Malay States, Philippine Islands).
6. *M. annulipes*, Walker, Proc. Linn. Soc. Lond. Vol. 1, p. 5 (1857) (Federated Malay States, Batavia).
dives, Schiner, Reise. der Novara, p. 31.
nero, Doleschall, Nat. Tijdsch. Ned. Ind. Vol. 14, p. 383.
Culex annulipes, Walker.
7. *M. major*, Theobald, Mon. Culic. Vol. 3, p. 270 (1903) (Bahr el Ghazal, Central Africa).

27. GENUS MELANOCONION, THEOBALD

Melanoconion, Theobald, Mon. Culic. Vol. 3, p. 238 (1903).

Characters. — Head clothed with narrow-curved scales and upright forked ones, the latter predominating. Thorax and scutellum with narrow-curved scales. Palpi short in the ♀, long in ♂. Proboscis expanded apically. Wings with the veins covered with small dense broad flat scales at their apical portions and along the costal border, which has on its upper side spine-like scales. Femora swollen at the apex and base, tibiae swollen at their apices.

Mostly small black gnats which bite viciously and which swarm in swamps and forests.

They are easily told from *Culex* by the form of the wing scales on the apical half of the wing.

Geographical distribution of species. — The six members of this genus occur in Asia, Africa, South America and the West Indies.

1. *M. atratus*, Theobald, Mon. Culic. Vol. 2, p. 55 (1901) (British Guiana, Brazil, West Indies).
Culex atratus, Theobald. — **Plate 2, Fig. 3.**
2. *M. luteopleurus*, Theobald, Mon. Culic. Vol. 3, p. 239 (1903) (Para).
3. *M. humilis*, Theobald, idem, Vol. 2, p. 336 (1901) (Brazil).
Culex humilis, Theobald.
4. *M. rimus*, Theobald, Rep. Liverp. School Trop. Med. IV, p. 11, app. (1901) (Old Calabar).
Culex rima, Theobald.
5. *M. indecorabilis*, Theobald, Mon. Culic. Vol. 3, p. 241 (1903) (Para, Brazil).
6. *M. spissipes*, Theobald, idem, Vol. 3, p. 242 (1903) (Trinidad).
7. *M. nigripalpus*, Theobald, ibidem, Vol. 2, p. 322 (1901) (S. Lucia).
Culex nigripalpus, Theobald.

28. GENUS LASIOCONOPS, THEOBALD

Lasioconops, Theobald, Mon. Culic. Vol. 3, p. 235 (1903).

Characters. — Head clothed with similar scales to *Culex*. Thorax with narrow-curved scales. Abdomen clothed with flat scales and with *large projecting flat lateral scales with deeply dentate apices*, in more or less dense tufts. Wings with typical *Culex* scales and venation. Palpi short in the ♀.

This genus is separated from *Culex* on account of the very peculiar abdominal scales.

Geographical distribution of species. — A single species only known in the ♀ sex.

1. *L. poicilipes*, Theobald, Mon. Culic. Vol. 3, p. 236 (1903) (Bonny, Gambia).

28. GENUS FINLAYA, THEOBALD

Finlaya, Theobald, Mon. Culic. Vol. 3, p. 281 (1903).

Characters. — Head clothed with flat scales, broad curved scales and numerous upright forked ones and with long projecting bristles in front; the broad curved ones border the eyes and form a median area, the flat ones are much rounded apically and not so closely applied to the surface as in *Stegomyia*. Mesothorax with narrow-curved scales. Scutellum with flat scales, somewhat rounded apically and narrow-curved ones form a basal row; prothoracic lobes with flat scales. Abdomen clothed with flat scales, the apical segments with ventral scaly tufts. Palpi of ♀ short, densely scaly, of 4 segments (?) in

the ♀, long. Eyes with large and pronounced facets. Legs with rather prominent scaly tufts on the femora. Wings spotted, with large broad, more or less pyriform light and dark scales.

This genus can at once be told by the scales of the head, wings and abdomen. Recent discovery of ♂'s show it to belong to the *Culicinae*.

Geographical distribution of species. — Three species occur, two being found in Asia and one in the East Indies.

1. *F. poicilia*, Theobald, Mon. Culic. Vol. 3, p. 283 (1903) (Penang, Philippine Islands).

2. *F. kochi*, Dönitz, Ins. Börse. Vol. 5, p. 38 (1901) (New Guinea).

Culex kochi, Dönitz.

3. *F. anopheloides*, Giles, Journ. Trop. Med. Oct. 15 (1903) (India).

Mansonia anopheloides, Giles. (This is not a *Mansonia* at all, but comes in this genus.)

5. SUBFAM. JOBLOTINÆ, THEOBALD

Trichoprosoponina. Theobald.

This subfamily so far contains but a single genus (*Joblotia*). It is separated from the *Culicinae* on account of the metanotum having scales and chaetae.

Characters. — Head clothed with flat scales and with a ring of upright forked scales across the posterior part. Thorax with rather flat spindle-shaped scales; prothoracic lobes with flat scales; scutellum with dense flat spindle-shaped scales; metanotum with a tuft of chaetae and with flat scales; apex of abdomen in ♀ bristly; in the ♂ the basal lobes of the genitalia densely scaled. Palpi of ♀ short, densely scaled, in the ♂ long, acuminate, not hairy, apex bristly. Wings with densely scaled veins, with rather broad flat scales, somewhat like *Taeniorhynchus* but shorter; fork-cells long; anal cell very large; mid cross-vein nearer the apex of the wing than the supernumerary; posterior cross-vein in a line with the mid. Clypeus bristly, also basal segments of the antennae. Second long vein nearly reaching the base of the wing. Larvae with short, thick, barrel shaped siphon. Eggs laid singly. Sylvan in habits.

1. GENUS JOBLOTIA, BLANCHARD

Joblotia. Blanchard, C. r. Soc. Biol. Paris (37) Vol. 53, p. 1843 (1901).

Trichoprosopon. Theobald, Mon. Culic. Vol. 2, p. 283 (1901).

Characters. — Same as for the Subfamily. Two species only known.

Geographical distribution of species. — Both species occur in South America and one in the West Indies.

1. *J. nivipes*, Theobald, Mon. Culic. Vol. 2, p. 285 (1901) (Trinidad, Brazil, Bolivia, Mexico).

Trichoprosopon nivipes, Theobald. — Plate 2, Fig. 12.

2. *J. lunata*, Theobald, Mon. Culic. Vol. 2, p. 279 (1901) (Brazil).

Wyeomyia lunata, Theobald.

6. SUBFAM. AEDEOMYINÆ, THEOBALD (1)

This subfamily contains all those Culicids in which the ♂ and ♀ palpi are short, often very short, the ♂ palpi never being long as in the preceding subfamilies. There are at present known 15 genera and

(1) Blanchard prefers the term *Aedinae*.

one *Hodgesia* Theobald may possibly come here. There are no definite characters by which ♂ *Aedeomyiinae* can be told from ♀ *Culicinae* or ♀ *Joblotinae*. There is similar squamose, nervation, and palpal variation here as in the other sections. Most of the genera are tropical and subtropical.

Characters. — Head clothed with all varieties of scales (*Aedes*); or flat scales and upright forked ones only (*Uranotaenia*, etc.); Thorax with flat, spindle shaped and narrow curved scales, also the scutellum; metanotum may be nude, or may have chaetae (*Wyeomyia*, etc.) or chaetae and scales (*Limatus*, *Sabethes*, etc.). Palpi short in the ♀ often minute, from 2 to 5 segments, never more than half the length of the proboscis; in the ♂ short, never more than half the length of the proboscis, often very small. Antennae pilose and verticillate in the ♀, plumose or verticillate in the ♂. Proboscis usually normal, sometimes very long (*Phoniomyia*), elbowed (*Limatus*) or much swollen (*Mimomyia*). Venation variable, fork-cells normally long (*Aedes*; *Haemagogus*, etc.), occasionally small (*Uranotaenia*). Ungues equal in ♀; the fore and mid unguis in the ♂ simple and serrated.

Larvae siphonate. The majority of species are sylvan in habits, none truly domestic as in *Culicinae* and *Anophelinae*.

TABLE OF GENERA

A. Antennae of ♂ plumose, of ♀ verticillated and pilose.

α Head with narrow-curved, upright forked and flat lateral scales.

Scutellum with narrow curved scales. Genus *Aedes*, Meigen.

αα Head with upright fan shaped scales.

Scutellum with flat scales. Wing scales broad and short
and asymmetrical apically. Genus *Aedeomyia*, Theobald.

ααα Head with flat scales all over.

β Fork-cells of normal length.

Scutellum with flat scales Genus *Ficalbia*, Theobald.

ββ Fork-cells small.

First submarginal cell much smaller than second posterior. Scutellum with flat scales Genus *Uranotaenia*, Arribalzaga.

βββ First submarginal cell slightly smaller than second posterior.

Scutellum with narrow curved scales Genus *Mimomyia*, Theobald.

B. Antennae of ♂ and ♀ very similar, both pilose and verticillate.

γ Antennae very long, much longer than proboscis, the second joint very long

Genus *Deinocerites*, Theobald.

γγ Antennae of normal length.

δ Head and scutellum with flat metallic scales.

ε Metanotum nude Genus *Haemagogus*, Williston.

εε Metanotum with chaetae or squamae or both.

Metanotum with chaetae.

ζ Legs simple.

π Proboscis very long.

Wing scales broadish, the lateral ones Taeni
orhynchus-like.

Proboscis longer than whole body; small species. Genus *Phoniomyia*, Theobald.

Wing scales dense and large; proboscis as long
as thorax and abdomen; frons drawn out into
a blunt spine. Large species

Genus *Runchomyia*, Theobald.

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Aedes. Lateral scales veins narrow, palpi ♂♀

Indolestes. Lateral scales broadly oblanceolate,
palpi ♀ = Aedes, ♂ about twice head,
almost $\frac{1}{2}$ proboscis.

Microleides. Lateral scales = Aedes, palpi ♂♀
= ♂ Indolestes.

Leptosomatomyia Theob., An. Mus. Nat.
Hung., III, 110, June, 1903;
♂ only. New Guinea. Palpi very short,
antennae slightly plumose. Occiput
with broad appressed scales, in the
middle with a few narrow ones,
posteriorly with upright forked
ones. Scutellum with broad scales
on the mid lobe, narrow ones on
the side ones. Lateral scales of
veins linear.

Polylepidozomyia Theob., An. Mus. Nat.
Hung., III, 118, June, 1903;
♀ only. New Guinea. Palpi ♀ short.
Occiput covered with broad appressed
scales and with some narrow ones
above insertion of neck. Scutellum
covered with broad scales. Metanotum
bare. Wings with scales and venation
of Culex.

- ππ *Proboscis of moderate length.*
Wing scales narrow. Genus WYBOMYIA, Theobald.
Wing scales dense, long and broad Genus DENDROMYIA, Theobald.
Wing scales broad and rather short, ending
obliquely Genus SABETHOIDES, Theobald.
- εεε *Metanotum with scales and chaetae.*
 ζ *Legs with scaly paddles* Genus SABETHES, Robineau-Desvoidy.
 ζζ *Legs simple.*
Proboscis straight Genus GOELDIA, Theobald.
Proboscis elbowed Genus LIMATUS, Theobald.

I. GENUS AEDES, MEIGEN

Aedes. Meigen, Syst. Besch. Dip. Vol. 1, p. 13 (1818).

Characters. — Head clothed with narrow-curved scales on the middle, flat ones laterally, rather more spread out than in *Culex*, the narrow-curved scales forming a broad median area. Thorax with narrow-curved or almost hair-like scales; scutellum with narrow-curved scales; metanotum nude. Wing scales much as in typical *Culex*, the lateral ones long and thin, the median small and flat; fork-cells moderately long. Palpi small in both sexes; of 2 segments in the ♂, of 4 in the ♀, apical joint minute, mammilliform (traces of 5th segment?) Antennae verticillate in ♀; densely plumose in the ♂.

Geographical distribution of species. — Four species only known to belong definitely to this genus.

1. *AE. cinereus*, Meigen, Syst. Besch. Zweiflug. Ins. Vol. 1, p. 13 (1818) (Europe).
rufus, Gimmerthal.
2. *AE. fuscus*, Osten-Sacken, Bull. U. S. Geol. Surv. p. 191 (1845) (North America).
3. *AE. obscurus*, Giles, Handb. Gnats. (1 ed.) p. 348 (1900.).
4. *AE. pemaensis*, Theobald, Mon. Culic. Vol. 2, p. 235 (1901) (Pemba Island).

GENUS UNCERTAIN.

5. *AE. butleri*, Theobald, Mon. Culic. Vol. 2, p. 230 (1901) (Selangor).
6. *AE. nigriscopus*, Theobald, idem, p. 231 (1901) (Lower Amazon).
7. *AE. niger*, Theobald, ibidem, p. 237 (1901) (Old Calabar).

2. GENUS AEDEOMYIA, THEOBALD

Aedeomyia. Theobald, Mon. Culic. Vol. 2, p. 218 (1901).

Characters. — Head clothed with narrow fan shaped upright forked scales. Thorax with broad flat spindle-shaped scales; scutellum with broad scales. Abdomen densely scaled with flat scales often rather irregular. Palpi short in both sexes, scaly. Antennae plumose in ♂; verticillate in the ♀. Legs densely scaled, with dense scaly outstanding tufts. Wings densely scaled, mottled or spotted; wing scales broad and asymmetrical, very similar to those of *Mansonia* and also with elongate lateral ones. Forked cells moderately long.

This genus is easily told by the peculiar wing scales, no other *Aedine* genus having them at all the same.

Geographical distribution of species. — Two species only known to occur definitely, but a third described by Skuse as an *Aedes* probably belongs here.

1. *AE. squammipennis*, Arribalzaga, Et. Nat. Arg. Vol. 1, p. 151 (3) (1878) (South America, West Indies, Ceylon, India, Fed. Malay States, Sudan). — **Plate 2, Fig. 9.**
2. *AE. americana*, Neveu-Lemaire, Arch. de Parasit. Vol. 6, p. 23 (1902) (Counani, French Guiana).

GENUS UNCERTAIN.

- 3 *AE. venustipes*, Skuse, Proc. Linn. Soc. N. S. Wales, Vol. 3, p. 1761 (1889) (Elizabeth Bay, Nr. Sydney).

3. GENUS FICALBIA, THEOBALD

Ficalbia. Theobald, Mon. Culic. Vol. 3, p. 296. (1901).

Characters. — Head clothed with flat scales entirely, with a few upright forked ones behind. Thorax with narrow-curved scales; scutellum with flat scales only, metanotum nude. Palpi very small. Proboscis rather long, swollen apically. Wings with the fork-cells moderately long, the 1st submarginal longer than the 2d posterior; median vein-scales broad and spatulate; upper border of costa spiny. Ungues of ♂ unequal on fore and mid legs, all simple. Small species. The ♀ unknown.

Geographical distribution of species. — Two species only known, both ♂'s.

1. *F. simplex*, Theobald, Mon. Culic. Vol. 3, p. 297 (1901) (Ceylon).
2. *F. minima*, Theobald, idem, p. 262 (1901) (Quilon, S. India).

4. GENUS URANOTAENIA, ARRIBALZAGA

Uranotaenia. Arribalzaga, Dipt. Argent. p. 63 (1899).

Characters. — Head clothed with flat scales all over, and upright-forked ones (apparently not always visible, if present). Thorax clothed with narrow-curved scales and some flat ones; scutellum with flat scales; metanotum nude. Palpi very small in both ♂ and ♀. Proboscis expanded apically. Antennae plumose in the ♂; verticillate in the ♀. Wings with marked venation, the fork-cells both small, the first submarginal very small, smaller than the second posterior cell, stems of the fork-cells long; veins clothed with small broad equilateral scales, abruptly truncated and with lateral clavate or elliptical scales to some of the veins; on the roots of the wings are usually some flat scales of more or less brilliant hue; spine like scales along the costa. Of small size and usually with some metallic scales.

This genus is easily told by the marked fork-cells and scales on the head and thorax.

Geographical distribution of species. — This genus chiefly occurs in South America and the West Indies but also in North America, Africa and Australia.

1. *U. pulcherrima*, Arribalzaga, Dipt. Argent. p. 65 (1899) (Brazil, Argentine, Antigua).
2. *U. geometrica*, Theobald (Lutz Ms.), Mon. Culic. Vol. 2, p. 247 (1901) (Brazil). — ^c late 2, Fig. 10.
3. *U. saphirina*, Osten-Sacken, Trans. Amer. Ent. Soc. Vol. 2, p. 47 (United States).
Aedes saphirinus, Osten-Sacken.
4. *U. annulata*, Theobald, Mon. Culic. Vol. 2, p. 250 (1901) (Bonny, Gambia).
5. *U. natalia*, Arribalzaga, Dipt. Argent. p. 64 (1899) (Argentine, Brazil).
6. *U. pygmaea*, Theobald, Mon. Culic. Vol. 2, p. 254 (1901) (Queensland).
7. *U. caeruleocephala*, Theobald, idem, Vol. 2, p. 256 (1901) (Old Calabar, Gambia, Sudan).
8. *U. malayi*, Theobald, ibidem, Vol. 2, p. 258 (1901) (Selangor).
9. *U. alba*, Theobald, ibidem, Vol. 3, p. 303 (1903) (Mashonaland).
mashonaensis var. *alba*, Theobald, Mon. Culic. Vol. 2, p. 262 (1901).
10. *U. apicalis*, Theobald, Mon. Culic. Vol. 2, p. 298 (1903) (Antigua).
11. *U. pallidiventer*, Theobald, idem, Vol. 2, p. 300 (1903) (Brazil).
12. *U. lowii*, Theobald, ibidem, Vol. 2, p. 339 (1901) (St. Lucia, St. Vincent, Trinidad, Brazil).
13. *U. socialis*, Theobald, ibidem, Vol. 2, p. 340 (1901) (Jamaica).

5. GENUS MIMOMYIA, THEOBALD

Mimomyia. Theobald, Mon. Culic. Vol. 3, p. 304 (1903).

Characters. — Head clothed with flat scales and somewhat upright forked ones; Thorax

with narrow-curved scales, no flat ones; scutellum with narrow-curved scales only. Fork-cells very small, but rather larger than in *Uranotania*, the first submarginal smaller than the second posterior, and the supernumerary cross-vein nearer the base of the wing than the mid cross-vein; scales short and rather broad along the veins, with lateral clavate scales to the veins here and there. No lines of flat metallic scales at the base of the wings. Palpi very small in both sexes. Proboscis in the male swollen.

Allied to *Uranotania* but can at once be separated by the larger fork-cells, absence of metallic flat scales at the base of the wings and on the scutellum.

Geographical distribution of species.— The genus is represented by two definite species and probably a third.

1. *M. splendens*, Theobald, Mon. Culic. Vol. 3, p. 304 (1903) (Uganda, Sudan).
2. *M. uniformis*, Theobald, Rep. Lab. Gordon Coll. Khartoum, p. 80 (1904) (Sudan).

GENUS UNCERTAIN

3. *M. mashonaensis* (non var. *alba*), Theobald, Mon. Culic. Vol. 2, p. 259 (1901); & Vol. 3, p. 306 (1903) (Mashonaland).

6. GENUS DEINOCERITES, THEOBALD

Deinocerites, Theobald, Mon. Culic. Vol. 2, p. 215 (1901).

Brachiomyia, Theobald, idem, Vol. 2, p. 343 (1901).

Characters. — Head ornamented with thin curved flat scales on the vertex and occiput and long forked upright scales. Thorax with flat curved narrow spindle-shaped scales; scutellum with narrow-curved scales. Palpi of the ♀ and ♂ short, slightly longer in the ♂ than in the ♀. Antennae moderately long in the ♀, second joint very long, scaly, other segments pilose and finely verticillate; ♂ antennæ very long, filiform and pilose, longer than the whole body, the second segment long, the segments become gradually shorter towards the apex, first four or more segments scaly, in life the apical segments are swollen. Proboscis not as long as the antennæ. Venation as in *Culex*; fork-cells rather long; scales rather large.

The essential characters of the genus are the long scaly antennae, especially the elongation of the second segments.

Geographical distribution of species.— Two species only known, both from the West Indies. Larvæ live in crabholes.

1. *D. cancer*, Theobald, Mon. Culic. Vol. 2, p. 215 (1901) (West Indies and British Guiana). — **Plate 2, Fig. 7.**
2. *D. magna*, Theobald, idem, Vol. 2, p. 344 (1901) (Saint Lucia).

Brachiomyia magna, Theobald.

7. GENUS HAEMAGOGUS, WILLISTON

Haemagogus, Williston, Trans. Ent. Soc. Lond. p. 271 (1896).

Characters. — Head clothed with flat scales. Thorax with flat scales often irregularly disposed. Scutellum with flat metallic scales. Metanotum nude. Abdomen clothed with flat metallic scales. Palpi short in both sexes, of 5 segments in the ♀. Wings with normal venation.

Antennae verticillate and pilose in both sexes, rather denser in the ♂ than ♀.

Easily told by their flat metallic scales and *Culex*-like venation, from other allied genera.

Geographical distribution of species. — Three species occur in South and Southern North America and the West Indies.

1. *H. cyaneus*, Fabricius, Syst. Antl. p. 35 (9) (1805) (South America, West Indies).
2. *H. albomaculatus*, Theobald, Mon. Culic. Vol. 3, p. 308 (1903) (British Guiana).
3. *H. equinus*, Theobald, The Entom. p. 282 (1903) (Jamaica).

8. GENUS PHONIOMYIA, THEOBALD

Phoniomyia, Theobald, Mon. Culic. Vol. 3, p. 311 (1903).

Characters. — Head scales flat. Thoracic scales flat and spindle shaped, irregularly disposed; scutellum with flat scales; metanotum with chaetae, no squamae. Palpi short in both sexes. Wing scales broad, the lateral ones *Taeniorhynchus*-like; the second long vein not carried past the marginal transverse. Proboscis very long, longer than the whole body.

Clearly distinct from *Wyeomyia* on account of the broader wing scales and the greatly elongated proboscis.

Geographical distribution of species.

1. *P. longirostris*, Theobald, Mon. Culic. Vol. 2, p. 275 (1901) (West Indies, Brazil). — Plate 2, Fig. 11.
Wyeomyia trinidadensis, Theobald, Mon. Culic. Vol. 2, p. 277 (1901).

9. GENUS RUNCHOMYIA, THEOBALD

Runchomyia, Theobald, Mon. Culic. Vol. 3, p. 319 (1903).

Characters. — Head covered with flat scales all over with some upright-forked ones behind in line as in *Joblotia*. Thorax with narrow-curved scales and broader flatter ones over the roots of the wings and in front of the scutellum; scutellum and prothoracic lobes with flat scales; metanotum with a tuft of chaetae. Abdomen with flat scales and a ventral apical tuft of bristles. Palpi short in the ♀, apparently of 2 segments. Proboscis very long in the ♀, as long as the whole body, scaly; basal joint of antennae bristly, flagellum verticillate; clypeus nude; frons drawn out into a blunt spine. Legs with hind tibiae dilated. Wings with rather broad scales; fork-cells long; cross-veins normal.

This genus is closely related to *Dendromyia* but can be told by the long ♀ proboscis, the wings scales, and peculiar blunt projecting frontal process. The ♂ is unknown.

Geographical distribution of species. — One species only described, but I have another distinct one not yet examined.

1. *R. frontosa*, Theobald, Mon. Culic. Vol. 3, p. 319 (1903) (British Guiana).

10. GENUS WYEOMYIA, THEOBALD

Wyeomyia, Theobald, Mon. Culic. Vol. 2, p. 267 (1901); Vol. 3, p. 318 (1903).

Characters. — Head covered with flat scales. Thorax with spindle shaped and flat scales; scutellum and prothoracic lobes with flat scales; metanotum with chaetae. Palpi very small. Antennae pilose and verticillate in ♀. Male very similar to ♀. Proboscis not as long as the whole body.

Wings with the veins with narrowish lateral scales; fork-cells long and narrow. Distinguished from the preceding and the following genera by the narrow linear vein scales and short proboscis.

Geographical distribution of species. — Two species occur in this genus as now restricted both from the West Indies and South America.

1. *W. grayii*, Theobald, Mon. Culic. Vol. 2, p. 269 (1901) (West Indies).
2. *W. pertinans*, Williston, Trans. Ent. Soc. Lond. 271 (1896) (Saint Vincent).

GENUS UNCERTAIN

3. *Aedes (Wyeomyia) perturbans*, Williston, Trans. Ent. Soc. Lond. p. 272 (1896) (Saint Vincent).

11. GENUS DENDROMYIA, THEOBALD

Dendromyia, Theobald, Mon. Culic. Vol. 3, p. 313 (1903).

Characters. — Head covered with flat scales. Mesothorax with large spindle-shaped scales; prothoracic lobes with flat scales; scutellum with small flat scales much rounded apically. Basal segments of the antennae scaly. Proboscis of moderate length, swollen apically. Wings with long broad, dense, *Taeniorhynchus*-like scales, some ending asymmetrically; fork-cells long.

This genus is allied to *Wyeomyia* but differs in scutellar and wing scale characters, being easily told by the dense wing scales. From *Phoniomyia*, the much shorter proboscis and more densely scaled wings will enable it to be separated at once.

Geographical distribution of species. — Five species are known, one previously placed in the genus *Wyeomyia*.

1. *D. ulocoma*, Theobald, Mon. Culic. Vol. 3, p. 313 (1903) (British Guiana).
2. *D. asullepta*, Theobald, idem, Vol. 3, p. 315 (1903) (British Guiana).
3. *D. paraensis*, Theobald, ibidem, Vol. 3, p. 316 (1903) (Para, Brazil).
4. *D. quasiluteoventralis*, Theobald, ibidem, Vol. 3, p. 317 (1903) (British Guiana).
5. *D. luteoventralis*, Theobald, ibidem, Vol. 2, p. 348 (1901) (Brazil, British Guiana, Trinidad).

12. GENUS SABETHOIDES, THEOBALD

Sabethoides, Theobald, Mon. Culic. Vol. 3, p. 328 (1903).

Characters. — Head covered with flat scales. Thorax with small and large flat scales ending convexly, dense over the roots of the wings and scutellum; metanotum with clatae. Palpi very short in ♀ (♂ unknown), of 2 segments, about one tenth the length of the proboscis. Proboscis as long or a little longer than the abdomen, not swollen to any extent apically. Antennae of ♀ densely pilose, not as long as the proboscis. Wings with rather short, broad scales, asymmetrical; the posterior cross-vein either in a line with or just in front of the mid cross-vein. Legs simple, unguis of ♀ equal and simple.

This genus is closely allied to *Sabethes* but differs in (1) having simple legs (2) shorter ♀ palpi and (3) longer proboscis, not so distinctly swollen at the apex.

Geographical distribution of species. — The single species known was described as a ♀ *Sabethes*. It was taken to be the ♀ of *Sabethes* by the collectors, the ♂'s of *Sabethes* were supposed to be paddled, the ♂'s with simple legs.

1. *S. confusus*, Theobald, Mon. Culic. Vol. 3, p. 328 (Brazil, British Guiana).
Sabethes remipes, ♂ Theobald (non Wiedemann), Mon. Culic. Vol. 2, p. 246 (1903).
Sabethes nitidus, ♂ Theobald, Mon. Culic. Vol. 2, p. 247 (1901).

13. GENUS SABETHES, ROBINEAU-DESVOIDY

Sabethes, Robineau-Desvoidy, Essai Culic. (1827).

Characters. — Head clothed with flat scales and with very short upright forked ones. Thorax with short flat scales; scutellum with flat scales; metanotum with chaetae and squamae. Antennae of ♀ pilose, of ♂ pilose, but rather denser than the ♀. Palpi short, slightly longer in the ♂ than in the ♀. Clypeus nude, proboscis of moderate length. Wings rather long and narrow with dense broad scales ending asymmetrically, fork-cells long, posterior cross vein normally nearer the apex of the wing than the mid cross-vein, in the ♂ nearly its own length nearer the apex, in the ♀ in a line with the mid or nearly so. One or more pairs of legs with dense paddle like masses of scales in both ♂ and ♀. Ungues in ♂ all simple, the fore and hind equal, the mid unequal, and of peculiar form.

The ♂s' and ♀s' are so much alike they cannot be separated except by an examination of the unguis or genitalia.

Geographical distribution of species. — Five species are known, all occurring in South America.

1. *S. remipes*, Wiedemann, Auss. Zweifl. Ins. Eur. Vol. 1, p. 573 (1828) (Brazil, British Guiana).
2. *S. nitidus*, Theobald, Mon. Culic. Vol. 2, p. 347 (1901) (Brazil).
3. *S. longipes*, Macquart, Syst. Antl. Vol. 4, p. 400 (1794) (Brazil, Guiana). — **Plate 2, Fig. 8.**
^{locustipes}
locustipes, Robineau-Desvoidy, Ess. Culic. (1823).
Culex longipes, Macquart.
4. *S. lutzii*, Theobald, Mon. Culic. Vol. 3, p. 323 (1903) (Brazil).
5. *S. albiprivus*, Lutz, Ms. idem, Vol. 2, p. 323 (1903) (Brazil).

14. GENUS GOELDIA, THEOBALD

Goeldia. Theobald, Mon. Culic. Vol. 3, p. 330 (1903).

Characters. — Head clothed with flat scales; mesothorax with flat spindle-shaped scales and larger narrow-curved ones, lanceolate in form before the scutellum; scutellum with flat scales; metanotum with chaetae and squamae. Palpi in the ♂ nearly one-third the length of the proboscis, in the ♀ quite small; proboscis short and thick, not as long as the body. Wing scales dense and elongated, ending asymmetrically. Cross-veins of ♂ like *Culex*.

This genus differs from *Sabethoides* in its *Culex*-like venation.

Geographical distribution of species. — A single species only known.

1. *G. fluviatilis*, Theobald, Mon. Culic. Vol. 3, p. 331 (1903) (Brazil, British Guiana).

15. GENUS LIMATUS, THEOBALD

Limatus. Theobald, Mon. Culic. Vol. 2, p. 349 (1901).

Simondella. Laveran, C. r. Soc. Biol. Paris. Vol. 54, p. 1158 (1907) (Laveran & Simond).

Characters. — Head covered with flat scales. Thorax with large flat scales of two sizes, very convex at their free ends; scutellum with dense flat scales; metanotum with chaetae and squamae. Palpi minute in ♀ and ♂. Proboscis in ♀ of moderate length, swollen apically, straight, in the ♂ elbowed above the middle with dense scales standing out at the joint and apex. Wings with rather broad elongate, more or less conical scales, the free end broad and convex, some slightly asymmetrical; in the ♂ the scales on the basal parts of the veins pedunculated; fork-cells long; cross-veins as in *Culex*.

This genus can at once be told by the elbowed and tufted proboscis in the ♂ and by the wing and metanotal scale ornamentation.

Geographical distribution of species. — Two species from Brazil known.

1. *L. durhamii*, Theobald, Mon. Culic. Vol. 2, p. 350, ♀ (1901) & Vol. 3, p. 333, ♂ (1903) (Brazil).
2. *L. curvirostris*, Simond & Laveran, C. r. Soc. Biol. Vol. 54, p. 1158 (1907) (Rio de Janeiro) (1).

POSITION UNCERTAIN

16. GENUS HODGESIA, THEOBALD

Hodgesia. Theobald, Journ. Trop. Med. Jan. 15. (1904).

Characters. — Head clothed with small flat scales, rather rounded apically and loosely applied

(1) I cannot consult this paper. The species *curvirostris* may be identical with my *Durhamii*.

to the surface. Thorax with large, long, narrow-curved scales on the mesonotum; small flat scales on the scutellum and flat scales as the prothoracic lobes. Abdomen with flat scales arranged ventrally so as to form slightly projecting tufts. Palpi very small, apparently of one segment only, scaly; antennae with large globular basal joint, long hairs at the nodes, short along the internodes. Proboscis not quite as long as the whole body. Legs long, especially the hind pair. Apices of femora and tibiae dilated; fore femora slightly swollen. Wings with normal *Culicine* venation, but the 3rd vein, is carried past the marginal cross-vein as a scaled-vein; lateral vein-scales long and nearly over-lapping those of contiguous veins, their apices with marked lateral spines. Male unknown.

This genus presents affinities to *Stegomyia*, but can at once be told by the marked lateral vein-scales. The minute palpi however seem to place it in the *Aedeomyiinae*. Until the ♂ is found its exact position cannot be defined.

Geographical distribution of species. — One species only occurs, which is a bloodsucker and very annoying.

1. *H. sanguina*, Theobald, Journ. Trop. Med. Jan. 15. (1904) (Uganda).

7. SUBFAM. HEPTAPHLEBOMYINÆ, THEOBALD

This subfamily has been formed to include an aberrant species in which there is a distinct scaled seventh longitudinal vein.

Characters. — Head covered with median narrow-curved, flat lateral and upright forked scales as in *Culex*. Thorax with narrow-curved scales and also the scutellum; metanotum nude. Abdomen simple as in *Culex*. Palpi of ♀ short, clavate, apical segment swollen. Wings with normal *Culex*-scales; fork-cells long, a distinct scaled seventh long vein present. Male unknown (1).

1. GENUS HEPTAPHLEBOMYIA, THEOBALD

Heptaphlebomyia. Mon. Culic. Vol. 3, p. 337 (1903).

Geographical distribution of species. — The single species was taken in Mashonaland (Also recently found in Angola, Portugese West Africa).

1. *H. simplex*, Theobald, Mon. Culic. Vol. 3, p. 337 (1903).

8. SUBFAM. CORETHRINAE, THEOBALD

This subfamily contains two old genera *Corethra* and *Mochlonyx* to which Coquillett has recently added several new ones. These insects have no true scales as in the other subfamilies and no piercing mouth, but as they venation so closely agrees they have been included in the family *Culicidæ*. Undoubtedly they form a connecting link between the *Culicidæ* and *Chironomidæ*. It would probably be best to treat them as a distinct family: *Corethrinidae*.

Characters. — Body with hairs, not scaly. Wings with typical *Culicine* venation but with hair-like scales not true scales, except along the wing fringe. Proboscis very short, not formed for piercing. Antennae of ♂ plumose; of ♀ pilose. Palpi about the same length in the ♂ and ♀. Scutellum simple, never trilobed. Legs long and slender, hairy, unarmed.

A series of males and females has been received whilst this work was in the press from Bihé, Angola. Further details will be given in the Entomologist for 1905. Two new species have also been received from Madagascar.

TABLE OF GENERA

- α. Metatarsus shorter than first tarsal.* Genus CORETHRA, Meigen (= *Mochlonyx*, Loew).
αα. Metatarsus longer than first tarsal.
 Large species 10 or more mm, tarsal claws bifid Genus PELOREMPIS, Johannsen.
 Small species with simple tarsal claws.
 Antennae with second segment long.
 Spaces between verticels bare Genus SAYOMYIA, Coquillett.
 Spaces between verticels hairy. Genus CORETHRELLA, Coquillett.
 Antennae with second segment short.
 Spaces between verticels bare Genus EUCORETHRA, Coquillett.

1. GENUS CORETHRA, MEIGEN (NOT LOEW)

Corethra. Meigen, Illig. Mag. Vol. 2, p. 260 (1803).

Mochlonyx. Loew, Ent. Zeit. Stett. p. 121 (1844).

Characters. — Proboscis short in ♂ and ♀. Palpi twice as long as the proboscis. Last two segments of the antennae longest, segments increase in size from base to apex. Wings with the cross-veins nearer the base than in *Sayomyia*; fork-cells long, stems short. The legs have the first tarsal joint (Metatarsus) always shorter than the second tarsal; unguis moderately large, uniserrated.

Geographical distribution of species. — Three species only known, two in Europe, the other in North America.

1. *C. velutinus*, Ruthe, Isis. p. 1205 (1831) (Europe).
 Mochlonyx velutinus, Ruthe.
 Mochlonyx effoetus, Walker, Ins. Brit. Dipt. Vol. 3, p. 252 (1851)
2. *C. cinctipes*, Coquillett, The Canad. Ent. p. 190, July (1903) (North America).
3. *C. culiciformis*, De Geer, Mém. Hist. Ins. Vol. 6, p. 372 (1776).

2. GENUS PELOREMPIS, JOHANNSEN

Pelorempis. Johannsen, Bull. 68 Ent. 18. New York State Mus. p. 402 (1903).

Characters. — Large species resembling *Psorophora* in general appearance. Palpi longer than the proboscis, of 4 segments; antennae of 15 segments, the basal one disc-like, second short and thick, rest including the apical one small, verticillate with a few hairs of moderate length, no ocelli. Legs long and slender; metatarsus nearly as long as the following four joints taken together; unguis slender, each with a single tooth. Wings long and slender; the margins and veins except the cross-veins and first anal covered with flattened hairs.

Geographical distribution of species. — A single species only known.

1. *P. americana*, Johannsen, Bull. 68 Ent. 18 New York State Mus. p. 403 (1903).

3. GENUS SAYOMYIA, COQUILLET

Sayomyia. Coquillett, The Canad. Ent. p. 189, July (1903).

Corethra. Loew (non Meigen).

Characters. — Hairs of antennae gathered into whorls (verticillate) spaces between the whorls nude. Pilose in ♀; plumose in ♂. First tarsal segment longer than the second; unguis small and simple. Venation typical. The majority of species described as *Corethra* belong here.

Geographical distribution of species. — The genus is represented over most of the globe, but the species nowhere seem abundant except in some parts of Africa.

1. *S. punctipennis*, Say, Journ. Acad. Nat. Sc. Philad. Vol. 3, p. 16 (North America, West Indies).
Corethra punctipennis, Say.
Corethra tricittata, Loew, Ent. Zeit. Stett. p. 388 (1885).
2. *S. plumicornis*, Fabricius, Ent. Syst. Vol. 4, p. 246, 58 (1792) (Europe, North America).
lateralis, Latreille, Gen. Crust. Vol. 4, p. 247.
hajiensis, Gmelin, Syst. Nat. Vol. 5, 28, 26, 101.
crystallina, De Geer, Ins. Vol. 6, p. 149, 20.
pilicornis, Fabricius, Mant. Ins. Vol. 2, 325, 49.
var. americana, Johannsen.
3. *S. ? nyblæi*, Zetterstedt, Ins. Lapp. p. 830 (Scandinavia, Riga?).
Erioptera nyblæi, Zetterstedt.
?Corethra pilipes, Gimmerthal, Bull. Soc. Nat. Moscou, Vol. 18, p. 279 (1845).
4. *S. pallida*, Fabricius, Ent. Syst. Antl. Vol. 4, p. 245 (Europe).
5. *S. flavicans*, Meigen, Syst. Besch. p. 248 (1818) (Germany).
6. *S. asiatica*, Giles, The Entomologist, p. 196 (1901) (India).
7. *S. fusca*, Staeger, Nat. Tidsskr. Vol. 2, p. 556 (1839) (Denmark).
8. *S. manillensis*, Schiner, Reise Novara, Dipt. p. 30 (Manila).
9. *S. rufa*, Zetterstedt, Ins. Lapp. p. 808 (Lapland).
10. *S. obscuripes*, Van der Wulp, Tijdschr. v. Ent. Vol. 2, 1601 (Holland).
11. *S. fallens*, Schiner (vide Theobald, Mon. Culic. Vol. 2, p. 307).
12. *S. antarctica*, Hudson, Man. Ent. N. Zeal., p. 43 (New Zealand).
13. *S. braziliensis*, Theobald, Mon. Culic. Vol. 2, p. 302 (1901) (Brazil).
14. *S. ceratopogones*, Theobald, idem, Vol. 3, p. 338 (1983) (Gambia).
15. *S. cornfordii*, Theobald, ibidem, Vol. 3, p. 339 (1903) (China).
16. *S. appendiculata*, Herrick, Minnesota Geol. Nat. Hist. Surv. (1884) (Northern America).
17. *S. albipes*, Johannsen, Bull. 68 Ent. 18 New York State Mus. p. 398 (1903) (Northern America).
18. *S. queenslandensis*, nov. sp. (1) (Bupengary, Queensland).

4. GENUS CORETHRELLA, COQUILLET

Corethrella. Coquillett, Journ. New York Ent. Soc. Vol. 10, p. 191.

Characters. — Thorax, scutellum and abdomen and legs covered with long coarse hairs, many being as long as the fore metatarsus. Antennae of ♂ thickly covered with long hairs arranged all along the shaft excepting in the apical half of the 13th and all of the 14th and 15th which have only short hairs. The 15th or apical joint is slightly enlarged and conical. Antennae of the ♀ has a circlet of a few long hairs at the base of each joint and another irregular circlet of somewhat shorter hair on the middle of it. Palpi and proboscis short, the former about twice as long as the latter. The metatarsus is longer than the following joint and the tarsal claws are simple and much curved.

Geographical distribution of species. — A single species only known.

1. *C. brakeleyi*, Coquillett, Ent. News, March, p. 95 (1902) (North America).

5. GENUS EUCORETHRA, UNDERWOOD

Eucorethra. Underwood, Science Aug. 182 (1903).

Characters. — Intermediate between *Corethrella* and *Sayomyia* having the antennae 14-jointed as

1; *S. queenslandensis*, nov. spec.

Head grey; eyes black; antennae grey with dusky bands, basal segment globular, yellowish-grey; hairs pallid; proboscis brown. Thorax pale tawny with a medial and lateral bright chestnut-brown spots and with long pale golden hairs. Abdomen pale yellowish-brown, the apices of the segments chestnut-brown; hairs pale. Legs with the femora and tibiae with many alternate bands of brown and white giving a spotted appearance; tarsi brown with a few broad pale bands; hairy. Wings with two brown spots near the costa and one at the base of the fork of the fifth long vein and another at the apex of the upper branch. Abdomen of male transparent white, with traces of dark apical bands. Tarsi deep brown with minute pale apical bands. — Length 2.5 to 3 mm.

in the former, but the spaces between the verticels almost bare as in the latter; differs from each in the much shorter second segment of the antennae which in only slightly longer than wide. Antennae of ♂ rather robust, submoniliform on the basal half, first six segments only slightly longer than wide, the remaining segments increasing in length and decreasing in diameter towards the apex, the antepenultimate is half the length of the penultimate; verticels composed of numerous very long bristly hairs except on the last segment; antennae of ♀ nearly cylindrical, the segments gradually increasing in length to the apex scarcely thickened at the insertion of the verticels, which consist of a few rather short bristly hairs, proboscis about one and one half times as long as height of head, palpus inserted near three-fourths of its length, of 4 segments; first tarsal segment much longer than the second; venation as in *Culex*.

Geographical distribution of species. — A single species only known at present.

1. *E. underwoodi*, Underwood, Canad. Ent. 272 (1903) (North America).

ADDENDA

GENUS ETORLEPTIOMYIA, THEOBALD

Etorleptiomyia. Theobald, Gordon Coll. Lab. Report p. 71 (1904).

Characters. — Head clothed with a mixture of narrow-curved scales, upright forked ones and small loose flat scales all over; antennae scaly on the basal joints. Thorax with scales of mesonotum narrow and curved, those of the scutellum flat and small. Abdomen clothed with flat scales. Wings with very marked heart-shaped scales, on the basal halves of the second, fourth, fifth and sixth veins; on the first long vein, base of second and fourth also are more or less *Mansonia*-like scales and along costal border also, scales on the apical halves of the veins pedunculated, clavate, peduncles very short; costa spiny; fork-cells moderately long.

This forms a very distinct genus, easily told by the curious heart-shaped scales on the wings. The proboscis seems very weak.

The *Mansonia*-like scales are not exactly as in that genus, but approach them very closely.

Geographical distribution of species. — A single species only has so far been found in the Sudan.

1. *E. mediopunctata*, Theobald, Gordon Coll. Lab. Report p. 71 (1904) (Sudan).

Oreilia Ludlow, Can. Ent., XXXVII, ~~1905~~,
March, 1905.

= Ectoleptomyia Theobald, according to
Ludlow, l. c., XXXVIII, 1905; June, 1906.

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sericeus, Theob. (g. <i>Culex</i>)	28	thallasius, Theob. (g. <i>Culex</i>)	25	violaceus, Hoffm. (g. <i>Megarhinus</i>)	13
setulosus, Dol. (g. <i>Culex</i>)	29	theileri, Theob. (g. <i>Culex</i>)	26	virgultus, Theob. (g. <i>Culex</i>)	28
sierra-leonis, Theob. (g. <i>Culex</i>)	29	theobaldi, Giles (g. <i>Nyssorhynchus</i>)	11	viridifrons, Walk. (g. <i>Stegomyia</i>)	18
signifer, Coq. (g. <i>Stegomyia</i>)	19	Theobaldia (genus), Nev.-Lem.	23	viridis, Theob. (g. <i>Culex</i>)	29
sitiens, Wied. (g. <i>Culex</i>)	25	thomsoni, Theob. (g. <i>Stegomyia</i>)	18	virideventer, Giles (g. <i>Culex</i>)	28
siculus, Rob.-Desv. (g. <i>Culex</i>)	30	thoracicus (Rob.-Desv.) (g. <i>Culex</i>)	30	vishnui, Theob. (g. <i>Culex</i>)	25
similis, Theob. (g. <i>Culex</i>)	28	thorntonii, Ludl. (g. <i>Myzomyia</i>)	8	vittata, Theob. (g. <i>Grabhamia</i>)	24
simplex, Theob. (g. <i>Heptaphlebomyia</i>)	41	tortilis, Theob. (g. <i>Culex</i>)	26	vittatus, Bigot (g. <i>Scutomyia</i>)	19
simplex, Theob. (g. <i>Ficalbia</i>)	36	Toxorhynchites (genus), Theob.	13	vittatus, Phil. (g. <i>Culex</i>)	26
		tibialis, Rob.-Desv. (g. <i>Culex</i>)	30	vittiger, Skuse (g. <i>Culex</i>)	26
		tigripes, Grandpré (g. <i>Culex</i>)	29		

	Pages.		Pages.		Pages.
<i>vulgaris</i> , L. (<i>g. Culex</i>)	28	<i>willistoni</i> , Giles (<i>g. Culex</i>)	26	<i>ziemanni</i> , Grünb. (<i>g. Anopheles</i> ?)	12
<i>walkeri</i> , Theob. (<i>g. Anopheles</i>)	7	<i>willmori</i> , James (<i>Nyssorhynchus</i>)	11	<i>zombaensis</i> , Theob. (<i>g. Culex</i>)	28
<i>walkeri</i> , Theob. (<i>g. Howardina</i>)	21	Wyeomyia (genus), <i>i</i> Theob.	38	<i>zonatipes</i> , Walk. (<i>g. Stegomyia</i>)	18
<i>wellcomei</i> , Theob. (<i>g. Anopheles</i>)	7	<i>zammitii</i> , Theob. (<i>g. Acartomyia</i>)	24		

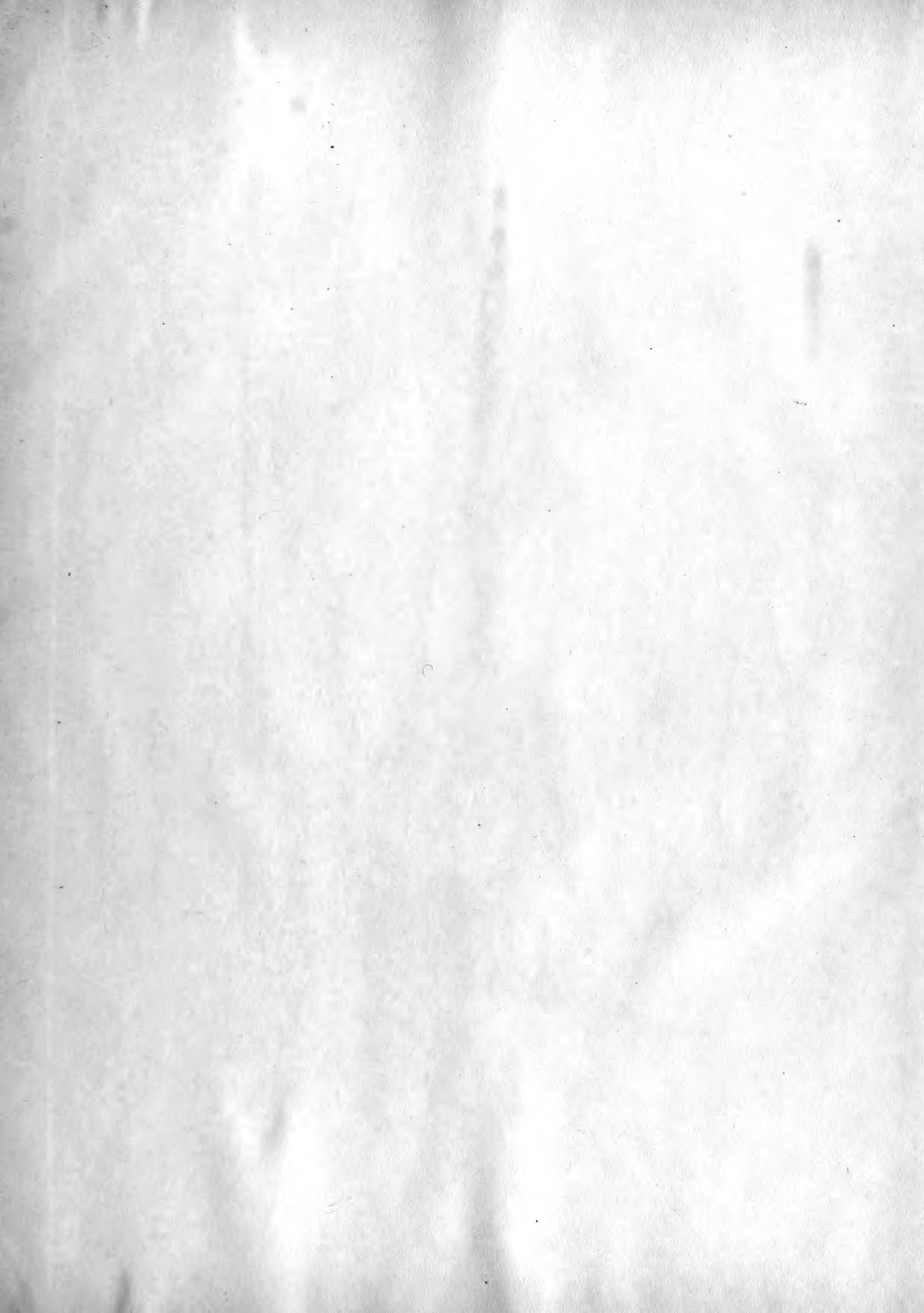
DESCRIPTION OF PLATES

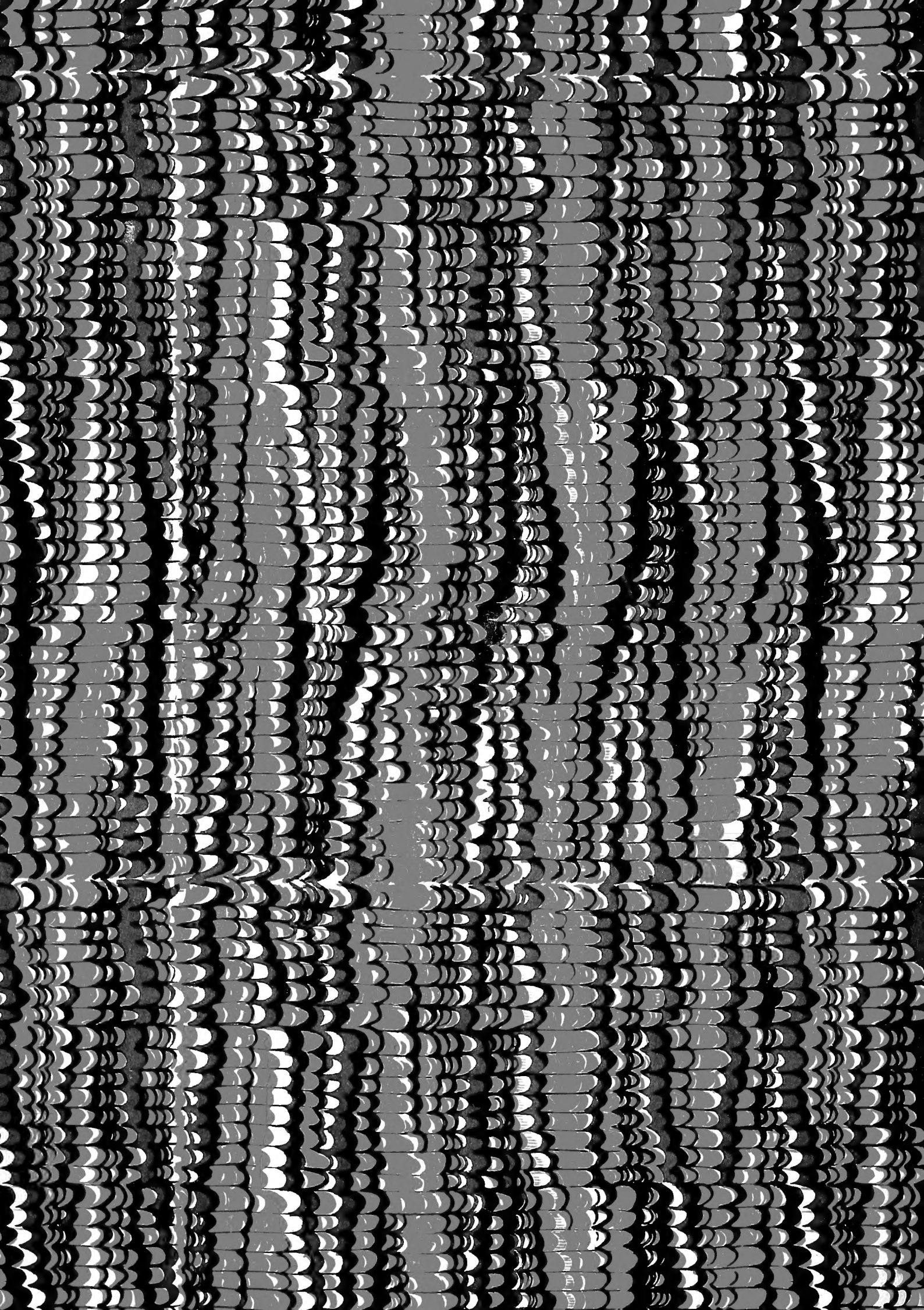
PLATE I

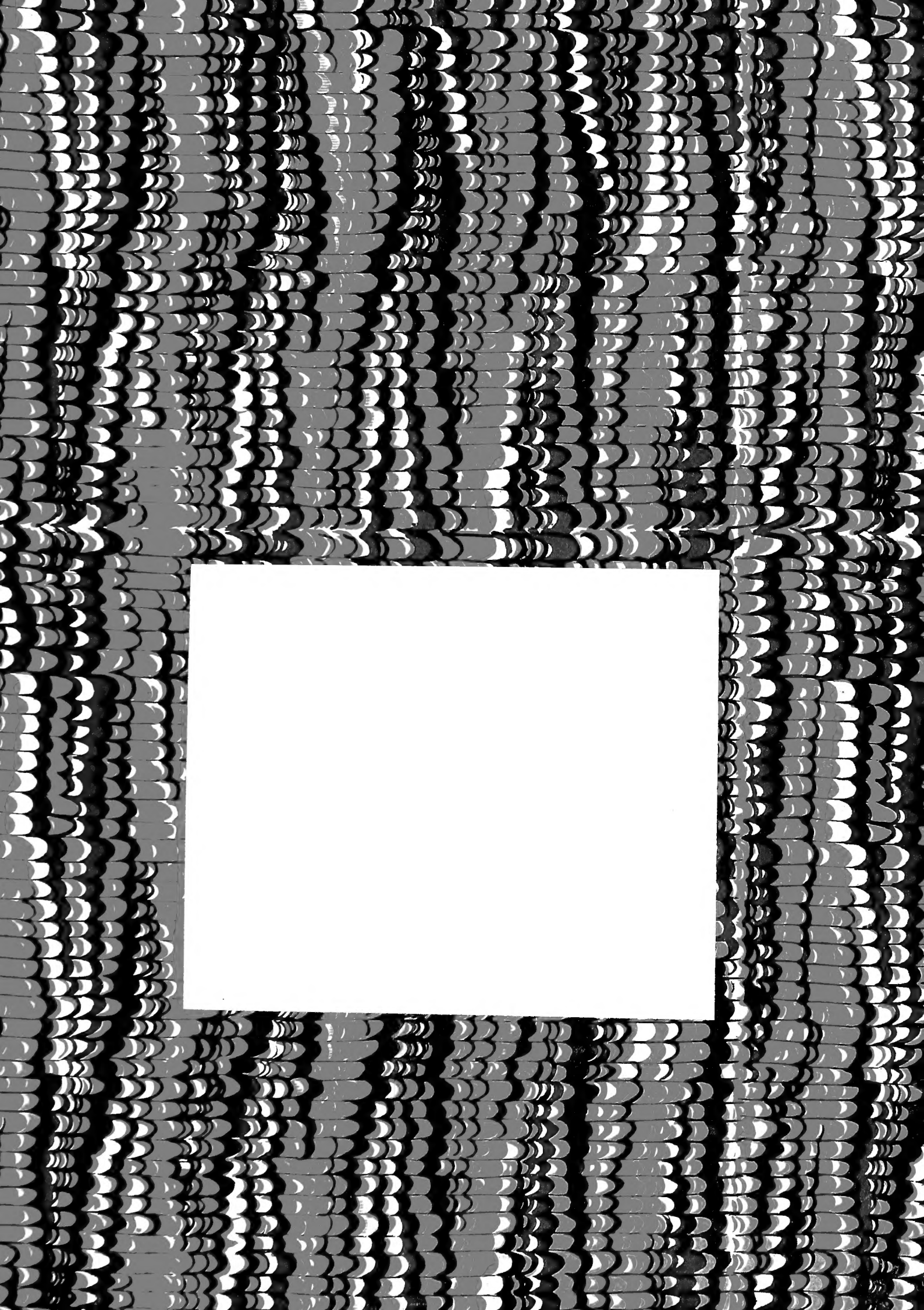
- Fig. 1. *Anopheles maculipennis* ♀, Meigen.
 — 2. *Myzomyia funesta* ♀, Giles.
 — 3. *Myzorhynchus barbirostris* ♀, Van der Wulp.
 — 4. *Cellia pharoensis* ♀, Theobald.
 — 5. *Megarhinus separatus* ♂, Arribalzaga.
 — 6. *Toxorhynchites brevipalpis* ♀, Theobald.
 — 7. *Mucidus africanus* ♀, Theobald.
 — 8. *Psorophora ciliata* ♀, Robineau-Desvoidy.
 — 9. *Xanthinosoma musica* ♀, Say.
 — 10. *Eretmapodites quinquevittatus* ♂, Theobald.
 — 11. *Stegomyia fasciata* ♀, Fabricius.
 — 12. *Theobaldia annulata* ♀, Linnaeus.

PLATE 2

- Fig. 1. *Lutzia bigotii* ♀, Bellardi.
 — 2. *Culex fatigans* ♀, Wiedemann.
 — 3. *Melanoconion atratus* ♀, Theobald.
 — 4. *Grabhamia jamaicensis* ♀, Theobald.
 — 5. *Taeniorhynchus fasciolatus* ♀, Arribalzaga.
 — 6. *Mansonia africana* ♀, Theobald.
 — 7. *Deinocerites cancer* ♀, Theobald.
 — 8. *Sabethes longipes* ♀, Fabricius.
 — 9. *Aedeomyia squammipennis* ♀, Arribalzaga.
 — 10. *Uranotaenia geometrica* ♀, Theobald.
 — 11. *Phoniomyia longirostris* ♀, Theobald.
 — 12. *Joblotia nivipes* ♀, Theobald (♂ palp.).







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